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THE
DISEASES OF THE BREAST,
AND THEIR
TREATMENT.

BY
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FELLOW OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND,
FELLOW OF THE LINNEAN SOCIETY,
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[THE DISSERTATION TO WHICH THE JACKSONIAN PRIZE, FOR 1848, WAS AWARDED BY THE COUNCIL OF
THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.]

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PREFACE.

Preparing for Publication,

BY THE SAME AUTHOR,

TUMORS,

THEIR STRUCTURE, PATHOLOGY, DIAGNOSIS, AND
TREATMENT.

description of their minute anatomy, I trust that the fault may be forgiven, and that the reader will attribute this, I hope pardonable, occupation of his time to a desire to render the explanation clear, and the identification of similar structures of easy attainment. How



WILSON AND OGILVY, 37, SKINNER STREET, SNOWHILL, LONDON.

P R E F A C E.

THE following treatise was undertaken with the desire to render the varieties of those diseases of the breast, which depend upon the development of new growths, or of tumors, more readily recognized by my professional brethren.

Opportunities on a large scale have occurred to me, through the kindness of many friends and my connection with Guy's Hospital, to examine, as minutely as possible, those morbid growths to which allusion is made above. And, if I have been rather prolix in the description of their minute anatomy, I trust that the fault may be forgiven, and that the reader will attribute this, I hope pardonable, occupation of his time to a desire to render the explanation clear, and the identification of similar structures of easy attainment. How

far I have been successful in my endeavours, the reader alone is competent to judge.

One great object has been the instruction of my junior professional brethren; and if in this one point only I may have succeeded, I shall look back upon the time devoted to the composition with gratification and no little pride.

And, should my seniors do me the honour to peruse these pages, I request them to recal those days, at the outset of their professional life, when they were acquiring daily, by personal experience, those facts, by acting upon which they have raised themselves to that high position in science and in society, of which they may be as justly proud, as it is rightfully merited.

To them I look to have corrected the faults which they must detect; to them I look to have supplied the omissions in which I fear my early efforts must abound; and to them I appeal for opportunities to prosecute further examinations into this most intricate, but not the less interesting, subject.

In conclusion, it is to be hoped that these investiga-

tions will not only throw some light on this very obscure subject, “ but (what is at present quite as much wanted) arouse the attention of observers, and at the same time give it that right direction, by pointing out *what ought to be observed*, without which all observation is lost labour.”—Sir J. HERSCHEL, *Treatise on Astronomy*, p. 338.

Wellington Street, Southwark,

June, 1850.

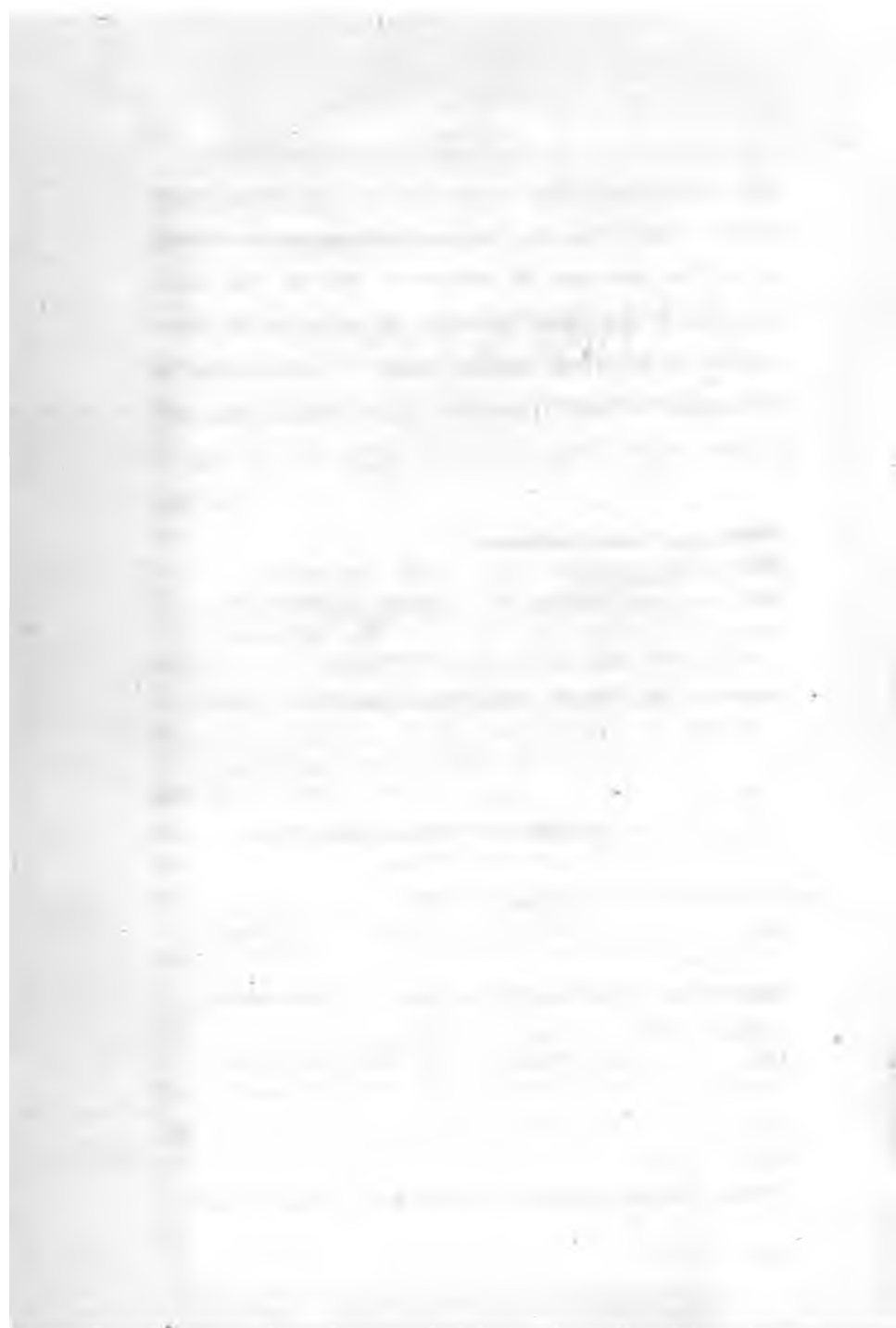


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I do not pretend that the following list contains all the works on the Diseases of the Breast. I hope, however, that it may be useful to the student; for, from these sources, many of the cases of which I constructed tables were extracted. Of the more modern works, I believe the most useful are inserted.

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ON THE
DISEASES OF THE MAMMARY GLAND.

OF THE CONFIGURATION AND THE ANATOMY OF THE
HUMAN MAMMARY GLANDS.

THE mammary glands, two in number, are placed, in the Human Subject, upon the anterior walls of the thorax,—one upon either side of the sternum; and they correspond, above, to the third,—and below, to the sixth or seventh ribs. They are attached by uniting tissue to the anterior surface of the *pectoralis major* muscles, and each is inclosed in a proper fibrous envelope, one layer of which passes in front, and the other behind the whole mass of the gland.

These glands are not peculiar to the female sex, but exist, although in a rudimentary state, in the male. They may be seen in the newly born infant. From birth, and during the period of adolescence, they are

flat in both sexes, and but very slightly elevated above the surrounding surface of the body. They are distinguishable by manipulation, and the skin of the part presents a circle of a darker or more rosy hue, with a minute papilla in the centre.

At the period of puberty certain changes take place in these glands; in the male the action is but slight, merely a little irritation and tenderness; but in the female, the whole organ, sympathizing with ovarian development, becomes completely changed, and that which previously was simply rudimentary, becomes fitted to perform the functions for which it has been provided by nature—the nourishment of the future offspring. During the remainder of the life of the male, its size varies with the growth of other parts, and, if somewhat larger in one instance than in another, it generally depends upon some unusual deposition of fat, and not upon a growth of glandular tissue.

On the contrary, in the healthy female, the development of these glands is most remarkable, in consequence of the great size which they speedily attain, for they increase in a much greater proportion than other parts of the body. This depends upon the development of a new tissue,—the proper *secreting* gland tissue, the *lobes* and *lobuli*, and the extension of the *ducts*.

The breasts now become prominent, of a hemispherical or conical shape, and project, more or less, according to the individual peculiarity, beyond the surrounding parts; they present a greater or less degree of fulness, according to the presence or absence of fat.

The well-formed mamma of the virgin is hemispherical, and possesses, in conjunction with its exquisite softness to the touch, a certain degree of tension, firmness, and elasticity. It should be full, smooth, and not in the least depending. The skin covering it should be in such a relation with the glandular tissue and fat as to have the appearance of extreme smoothness, or as if rather distended. When uncovered and without support, the *nipple* is directed forwards, outwards, and slightly upwards. The interval or fossa between the glands is known as the *bosom*.

Towards the centre of the gland, and projecting beyond it, a roundish obtuse elevation exists—the *papilla* or *nipple*. This, prior to conception, is of a light brown or rosy tint, and is surrounded, to a greater or less extent, by the *areola* of the same colour. Both in the size and colour of these parts much variety is remarked; depending somewhat, however, upon the natural complexion of the individual. The nipple presents a *base* or root, *body*, and *apex*. Its form becomes much modified by suckling, as well as by the improper pressure of the dress.

Within the boundary of the areola minute elevations of the skin are seen around the nipple, firm to the touch, and more or less distinct according to circumstances. These are *sebaceous follicles*; and they are termed the *large* and *small areola glands*.

In individuals with a very fair skin, the integuments of the breasts are so thin, and the cuticle so transpa-

rent, that the superficial veins are distinctly seen beneath.

Underneath the skin, and within a fibrous capsule,—the *fascia* of the mamma of Sir Astley Cooper,—lies the gland of the breast, surrounded with more or less fat, which is placed between it and the skin, and, in very small quantity, between it and the pectoral muscle. To a well-disposed layer of fat between the skin and the gland the beautiful roundness of this region is mainly attributable.

Fat is not found under the areola, but the gland and the milk ducts, or “*reservoirs*,” only; the last, at this point, admit of considerable distension.

The mammary gland, an appendage of the tegumentary system, is a conglomerate gland, resembling, in shape, a flattened hemisphere, unequally thick throughout, and composed of several lobes, with their excretory ducts. The *lobes* are composed of *lobuli*; these of *terminal lobuli*, or *acini*; and these again of the *secreting terminal cells*, all of which are intimately and firmly bound together by uniting tissue. In the interlobular spaces there is more or less adipose tissue deposited. The lobes do not communicate.

When a minute portion of a mammary gland is placed under the microscope, and examined with a low power, the terminal lobuli, or *acini*, are seen filled with the secreting cells; and these are rendered more distinct if a little diluted acetic acid be added and a higher magnifying power employed. (Plate I. figs. 5 and 6)

These cells are connected together by very delicate uniting or areolar tissue, and their parietes are formed of a clear and, as far as we can observe, almost structureless membrane. They are filled with epithelium. Minute capillary vessels may be seen ramifying between the cells; and the lactiferous ducts may also be detected. When a portion of an active gland is examined,—that is, of one removed from a woman who has died whilst suckling,—the terminal cells will be seen to contain not only epithelium, but the characteristic globules of milk, often in such quantities that the cells appear to be filled with nothing but these highly refracting globules. (Plate I. fig. 6 A.)

The more minute ducts unite to form larger, which converge towards the nipple, through which they pass; they vary in number from ten to twenty, and terminate with contracted mouths in wrinkles or depressions upon its extremity or apex. In the *areola* and *nipple* they are connected together by the uniting tissue, which contains a most unusual proportion of the nucleus fibres of Henle. Upon these fibres, which resemble the yellow elastic fibre tissue, the peculiar contractile property of the nipple depends. Beneath the areola the lactiferous tubes present peculiar dilatations—the “reservoirs” of Sir A. Cooper.

The nipple is said to contain erectile tissue, but I cannot find any structure deserving this appellation. Its elongation and increase of size during the act of suckling depends, I believe, upon the dilatation of the ducts within it, and not upon an increased flow of

blood to the part; and its subsequent return to its usual appearance, to the contractility of the fibres above mentioned.

The lactiferous tubes, or ducts, are composed of a "basement membrane," or proper tunic, which, upon its attached surface, is in connexion with the uniting fibre tissue in which ramify the capillary vessels. The free surface of this membrane supports a layer of epithelium consisting of small oval corpuscles, with a very minute central nucleus. This form of epithelium is found throughout the entire length of the ducts between the "reservoirs" and their peripheral terminations. In the "reservoirs" there appears to be a combination of this tessellated with the columnar epithelium, and this observation I find confirmed by M. Kölliker: "In the excretory ducts of the female breast Kölliker found cylinder epithelium*." Near to the mamillary termination of the ducts epidermis scales may be detected lining the tubes. (Plate I. figs. 2 and 3.)

The mammary glands are supplied with blood by branches from the internal mammary arteries, which reach them by perforating the intercostal spaces; by branches from the long thoracic arteries, and very often, in the female, by long branches, one for each gland, coming from the axillary arteries.

The arteries have accompanying venous branches which return the blood into larger veins, known by the same

* Canstatt's Jahresb. 1848; Biol., s. 32.

names as the arteries. There is a remarkable circle of vessels beneath or around the areola.

The lymphatic vessels from the breasts pass in two directions ; those from the sternal half of the organ to the glands situated along the course of the internal mammary arteries, and those from the axillary half to the glands placed in the axilla. Sir A. Cooper describes a deep set passing from the interior of the gland through the intercostal spaces.

The skin covering the mammary gland is supplied by filaments from the anterior branches of the second, third, fourth, and fifth intercostal nerves, as well as by filaments from the middle branches of the same intercostal nerves, especially the two superior ; also, by the supra-clavicular filaments from the third cervical nerve.

The foregoing observations demonstrate that there are *three* periods during which the mammary glands are in very different conditions.

The *first* period is that which extends from birth to the age at which puberty is about to be established—the *rudimentary* stage.

The *second* is that during which the development of the mammary gland takes place, and which commences sometimes before the first catamenial period — the *transition stage*.

The *third* is the period which extends from the age of puberty to the cessation of the catamenia, and during which time the organs are in such a state of perfection as to fit them, when called upon, to undergo those

changes which take place in them after impregnation—their *fully-developed*, but inactive stage.

To these three periodical conditions a *fourth* may be added, when the glandular tissue, sympathizing with the procreative function, undergoes changes in concert with the puerperal state; new secreting tissue is developed, and, immediately after birth, the *most perfect* condition of the organ is attained—its *active* stage.

A *fifth* condition ensues as a consequence of the decreasing ovarian energies, when these glands become atrophied, their tissue disappearing, or its place being supplied by adipose tissue—a state of *atrophy*.

There are certain affections or diseases peculiar to these different periods. In accordance, therefore, with these states, I propose to arrange the materials of this essay.

I. THE DISEASES *before* PUBERTY.

II. THE DISEASES *during* THE ESTABLISHMENT OF PUBERTY.

III. THE DISEASES *after* THE ESTABLISHMENT OF PUBERTY.

1. During pregnancy, the puerperal period, and lactation.
2. At any period or age after puberty.

I. ABNORMAL CONDITIONS AND DISEASES OF THE RUDIMENTARY ORGANS BEFORE THE COMMENCEMENT OF PUBERTY.

UNTIL the development of the mammary gland, and prior to the first catamenial period, the nipple, with a rudimentary glandular structure, or, as it is sometimes termed, *mammilla*, occupies the position in which, at a future period, the breast gland of the female is formed.

Whether of the male or female sex, this infantile organ is of a circular figure, rather larger than a pea, and apparently consists of a glandular structure. Possessed of a considerable degree of vascularity, it is, more or less, of a deep red colour, and the vessels which supply it are branches from the axillary artery. When pressed, a milky fluid, or, at other times, sebaceous matter, may be expressed from the ducts, which open upon the extremity of the rudimentary papilla. The papilla usually appears as if imbedded in the subjacent structures, and varies in size and colour.

Sir A. Cooper writes,* “in the foetal state between the seventh to the ninth month, this glandular substance is found, but of smaller size. At the end of the first year it is still large, and continues so during the second and the third year; and thenceforward it seems to lessen in both male and female, until the seventh and eighth

* Lectures on the Princ. and Pract. of Surg., by Tyrrell, ii. 452.

year. It is most conspicuous in fat subjects, as it is kept extended from the nipple by the adipose substance."

On the second or third day after birth the mammilla generally becomes tumefied, and, shortly afterwards, an exudation of a milky fluid takes place from the papilla. From this circumstance, therefore, we may conclude that a rudimentary glandular tissue exists in the part. This secretion appears both in male and female infants, although most abundant in the former, and its speedy removal is often a matter of anxious solicitude with the nurse. Hence frequently arises all the mischief; and in consequence of the repeated frictions instituted, with this object in view, inflammation of the part is induced, and great mischief is the result.

When permitted to pursue the natural course, the symptoms are as follows: tumidity, hardness, pain upon manipulation, and an exudation from the papilla of a fluid resembling milk, which, lasting for a day or two, gradually ceases, and with it a gradual subsidence of the other appearances follows. The tumefaction and hardness may extend to a very considerable degree—may last even as long a time as a week, and yet subside without causing further trouble.

I believe most of the ill consequences, such as acute inflammation, ending sometimes in abscess, result, in these cases, from the unjustifiable interference of the attendants, who with obstinate pertinacity, rub, squeeze, and pinch this delicate organ, with a view to the removal of the milky secretion. Such treatment should

never be permitted, and, if discovered, its discontinuance ordered.

When, however, medical interference is required, it is only necessary to apply an emollient poultice, or soothing application. Under ordinary circumstances, the part should be defended from any irritation likely to arise from the dress; and this effort of Nature be permitted to pursue its course unmolested, and without interference.

If acute inflammation of the mammilla should arise, it must of course be combated by the usual remedial means suitable to the tender age of the patient; and if suppuration become established, it is necessary to evacuate the pus, as soon as detected, by a small puncture with a lancet. The general health of the infant must be, at the same time, carefully watched.

A very interesting case (Case I.) is related by Mr. W. F. Wagstaffe, demonstrating the very severe form which such abscesses may assume, and which may, nevertheless, terminate happily.

Swelling of the mammilla has followed upon the cessation of a sanguineous discharge from the vulva (Case II.)

Between birth and puberty, in delicate and strumous children, I have seen the rudimentary mamma enlarge, become very painful, and give rise to much anxiety. An acrimonious discharge from the vagina very frequently coexists with this affection. It has not fallen to my lot to witness any more severe form of irritation than swelling, slight redness, and considerable pain on pres-

sure, accompanied with an oozing of a serous fluid from the mammilla. In all cases the alvine secretions were deranged, upon correcting which, and protecting the part from local pressure, the affection soon subsided. I believe little good results in these cases from local interference; and, if something must be recommended, tepid fluid applications of a soothing nature are the least likely to do harm.

CASE I.—ABSCESS OF THE BREASTS OF AN INFANT 25 DAYS OLD PRECEDED BY SECRETION OF MILK IN BOTH GLANDS.

On the evening of the 25th November, 1800, Mr. M. F. Wagstaffe was desired to visit the child of Mrs. Browne, of which child he had delivered her on the 31st of the preceding month. Upon examining the child, who by its violent shrieks and writhing of the body seemed to be in excruciating pain, the appearances were as follows:—A violent inflammation appeared, extending longitudinally from the upper surface of the right breast to the umbilicus; and laterally from the inferior angle of the scapula over the ribs to the inferior portion of the left breast. To trace its circumference, we will commence from the inferior angle of the right scapula passing nearly to the axilla, enveloping almost the whole of the right breast, descending to the scrobiculis cordis, then ascending as high as the nipple of the left breast, then suddenly descending in a straight line to a parallel with the umbilicus, passing close upon its upper surface, declining a little on the right side, then gradually diminishing in its ascent to the inferior angle of the scapula.

The mother stated that the infant was in apparent good health when she retired to rest the preceding evening, which it had enjoyed from the birth. In the night she was waked up

by its crying, and immediately applied it to the breast, which it eagerly embraced, and as speedily relinquished ; it continued crying till morning, when she undressed it, to examine whether any injury was the cause, having previously supposed it to be an affection of the bowels. On removing the clothes, she observed both breasts turgid, milk oozing from the nipples, the right breast much inflamed. These appearances induced her to apply a common poultice, which not affording the desired relief, she sent to Mr. Wagstaffe. He desired cloths dipped in Aq. Lytharg. Acet. comp. to be applied to the inflamed parts, and kept constantly wet. Rhubarb and calomel to be given directly, and Tinct. Opii, gutt. ij., every hour during the night.

Next day, lotion continued, and Tinct. Opii, gutt. j., every two hours. The inflammation did not materially abate, but became circumscribed to the limits before mentioned.

On 27th, abdomen became much distended, and very tense. Infus. Sennæ, one tea-spoonful every quarter of an hour, until it should operate freely ; fomentations to the abdomen afterwards, anointing it with Ung. Saturninum. Relief was afforded for about two hours.

28th.—Observing a fluctuation under the inflamed integuments, I directed a soft poultice to be applied, and gave Tinct. Opii, guttæ ij. with Decoct. Cinch. ʒss. ter die, which it swallowed with difficulty.

29th.—The abscess broke immediately over the scrobiculus cordis, when not less than four ounces of pus were evacuated. The medicines continued during the day.

30th.—Declined the breast.

December 1st.—Returned to breast a little, but refused wine and every other support. The wound now put on a formidable appearance, and I fully expected the infant would have sunk with exhaustion. A carrot poultice was applied, and repeated frequently for the three following days, when a large portion of the integuments sloughed off, and left part of the ribs and

sternum exposed, excepting their muscular covering. From this time the child had more frequent recourse to the breast, swallowed a little red wine, and took the bark as before, and has continued to improve in health ever since: the bark, however, affecting the bowels, was obliged to be omitted. I dressed the inner surface with yellow digestive, covering the whole with a pledget of cerat. epulot. I should mention, that an abscess had also formed under the inferior angle of the scapula, and evacuated itself by the aperture over the sternum. By turning the child with the face downwards, the integuments have adhered to the muscles beneath, from that part to the right breast, the abscess being first completely evacuated.

The wound is at this time, Jan. 4, nearly cicatrized, and the child perfectly well.

The inflammation was undoubtedly the cause of the following mischief; but to what exciting cause, asks Mr. Wagstaffe, is this inflammation, so extensive in its limits, and so rapid in its progress, to be referred? Is it to be attributed to the abundant secretion of milk in the breasts, producing distension? —*Medical and Physical Journal*, Vol. V. p. 239-40, Jan. 1801.

CASE II.—TUMEFACTION OF THE BREASTS OF AN INFANT UPON THE CESSATION OF HEMORRHAGE FROM THE VULVA.

Upon the 22nd July, 1833, a healthy young woman gave birth to a strong female infant. The infant presented nothing remarkable for the first three days, with the exception of being very restless during the night. A slight loss of blood was then remarked, which exuded guttatim from the genitals. On the third day the flux had diminished, and the blood had become more aqueous. On the fourth, some drops of pure blood came away, after which the flux entirely ceased. The liquid presented the appearance of menstrual blood. Five days after this running

the mammæ became swollen, without being inflamed, the infant continued healthy, and passed more tranquil nights.—*Barrier, quoted in Biblioth. du Méd. Prat. t. vi. p. 67.*

CASE III.—ABSCESS INVOLVING THE MAMMILLA AT THE AGE OF THREE MONTHS.

A woman brought her female infant, æt. three months, to the surgery, where Mr. Poland showed me the case, on account of a swelling of the right mammilla. The infant had been always delicate, and was suffering with catarrhal ophthalmia. Strong indications existed of its strumous diathesis. The mother stated that this infant, unlike her others, had no secretion in the breasts after birth,—that the nurse observed this, and that therefore no means were employed “to rub the milk away.” The infant was well sixteen days before being brought to the hospital. Fourteen days before, the right mammary region, including the nipple and areola, became red, painful, and swollen; and from this time the swelling had increased. When I saw it there was a red, shining, elevated swelling in the place of the right mammilla, the centre was yellowish, and doubtless there was pus. The left breast was quite healthy.

CASE IV.—SWELLING OF THE BREAST IN A CHILD.

A little girl, aged sixteen months, was brought to me on account of swelling in the right breast. The affected organ was twice the size of that on the other side. No injury had been inflicted, and the child's health was good, with the exception of slight gastric derangement. There was also a discharge from the vulva sufficient to produce irritation of the parts. I prescribed alteratives and mild tonics, and directed that the parts should be protected from the pressure of the dress. After the lapse of a few days, the irritation subsided, and the part returned to its normal appearance.

II. CONDITION AND DISEASES OF THE GLAND ABOUT THE AGE OF PUBERTY.

WHEN the ovaries become fully developed, and the catamenia established, or, in common terms, at the "age of puberty," the mammary glands enlarge, and the nipples are evolved. These changes usually take place without giving rise to any disturbance, and often with only a slight temporary inconvenience, more especially when occurring at the age anticipated by the mother. As, however, puberty may be hastened or delayed by a variety of circumstances, and as, in different climates, the catamenia are established at an earlier or later age, so there will be a corresponding diversity in the period at which these changes take place in the mammary glands. In strumous and delicate girls, they will be later; on the contrary, in the healthy and very robust, they may be rather in advance of the usual age; but, between the ages of 9 and 16 years, any enlargement, tenderness, or hardness of the breasts, may be regarded as the effect of a sympathetic influence originating in the development of the ovarian functions.

It would be idle at the present time to adduce evidence in support of the statement that close sympathies exist between the ovaries and breasts; the fact is firmly established, and universally acknowledged.

The mammary glands may be sufficiently developed in delicate girls, without the catamenia being esta-

blished, and the catamenia may appear without any well-marked increase in the pectoral glands. Anomalies of this kind are most likely to lead to the consultation of a surgeon; for it does not often happen that medical interference is sought in the usual course of events.

The anatomical change which results is chiefly a growth or development of gland tissue, which of itself alone does not produce, in a normal state, much increase of volume. Added to this, a deposit of adipose tissue takes place simultaneously in this region, which gives to the bust of the virgin its beautiful form and roundness.

At this period, morbid actions are rare in the mammary glands. When they exceed the naturally slight local disturbance, such as a sense of fulness or heat, tenderness on manipulation, and slow increase of volume, gentle remedial measures of a constitutional rather than of a local character must be administered. Rest, diminution of the usual quantity of food, saline laxatives, and absence from excitement, will counteract the general, as well as the local mischief.

Mr. Bransby Cooper relates a case in which a morbid growth was developed in the breast at this early period of life. It was removed by the knife, but the disease returned, and the patient died of cancer. (Case V.).

Mr. H. Lyford* states that he has seen carcinoma

* *Lancet*, xii. 332.

in a female child of eight years of age ; and in the Museum of St. Bartholomew's Hospital* there is a preparation of a mammary tumor "pale, uniformly firm," and with it a portion "like medullary substance," removed from a girl aged 16 years. Hence, we cannot affirm that the mammary glands, at the period of the establishment of puberty, are exempt from the development of carcinomatous growths.

The gland is liable at this time to attacks of inflammation, and I have seen chronic abscess form during this period of development in a very strumous girl.

The nervous system of the part may be the seat of excited functions, giving rise to the severe neuralgic affection comprehended under the term *mazodynia*. The remedial measures to which recourse must be had will be fully described when treating of this subject.

About this period, likewise, hypertrophy of the gland sometimes commences, and may proceed to a very great extent : but of this on another occasion.

Precocious development of the mammary glands has been witnessed ; in illustration of which anomaly I have quoted a case. Such a condition would scarcely be amenable to any treatment, and must be left to Nature. A very excellent paper on this subject, in which ten cases are related, will be perused with interest.†

CASE V.—CARCINOMA MEDULLARE IN THE BREAST OF A GIRL.

A girl aged 13 years, in whom the catamenia had appeared but

* Series xxxiv. 4.

† London Journal of Medicine, I. 85.

once, presented a great increase in the size of the left breast, immediately after menstruation. The organ felt softer than natural, and in some parts a kind of fluctuation was detected. She experienced no pain, not even when the part was pressed. Unusual size was the only indication afforded to the eye. Her aspect was highly cachectic. The axillary glands were not affected. In about ten days after her first visit, the growth had attained nearly double the size which it presented when first seen. Amputation was performed: the wound never cicatrized; and the patient died about six weeks after the operation. The tumor was composed of carcinoma medullare. Necropsy: Carcinomatous tubercles in the liver, lungs, and mesenteric glands.—*Lectures on Surgery*, by B. B. Cooper, in the *London Medical Gazette*, 1849, p. 795.

CASE VI.—THE MAMMÆ WERE WELL FORMED AT THREE YEARS OF AGE.

M. Bourjot Saint-Hilaire relates a case occurring in a little girl, born in Louisiana, of poor and white parents, the 31st December, 1827, with *well-formed breasts*, and the pubes covered with hair like that of a girl of thirteen or fourteen years of age. At the age of three years the catamenia appeared, and continued to reappear regularly every month to the time at which M. Lebeau transmitted this fact to M. Geoffroy St.-Hilaire. The catamenia were as abundant each time as in a woman at the age of puberty, and the duration of the period was four days.—*Gaz. Méd. de Paris*, 1834, p. 881.

III. THE MAMMARY GLANDS AFTER PUBERTY; THEIR ANOMALIES AND DISEASES.

VARIETIES in form and shape occur, to some extent; yet a correct knowledge of the usual disposition of the glandular tissue is essential to correct diagnosis. This tissue does not surround the nipple, taking this as an

assumed central point, equally upon every side ; nor can a gland be bisected into two symmetrical halves by a vertical incision passing through the nipple. With a view to the description of the precise position of tumors, I have been accustomed to divide the gland by a vertical and horizontal line, intersecting each other in the nipple, into four quarters.

The vertical line divides the gland into the internal *sternal*, and the external *axillary* portion

The horizontal line divides it into a superior *cervical*, and an inferior *abdominal* portion.

In the *sternal* the gland is not so thick as in the *axillary* half, nor is it, when unsupported, and the figure nude, so much developed in the *cervical* as in the *abdominal* half. In fact, the *sterno-cervical* quarters gently slope off to the nipple, whilst the fulness and roundness is chiefly peculiar to the *axillary-abdominal* portions. The axillary border of the gland, not unfrequently, feels as if it passed a little behind the axillary border of the *pectoralis major* muscle. There is, in fact, a preponderance of gland tissue in the last-named section of the organ, although, by some writers, this larger size of the lower part of the gland is attributed to the gravitation of the tissue of the organ.

ANOMALIES IN THE NUMBER AND SITUATION OF THE BREASTS.

The human subject possesses, normally, two mammary glands ; and these are placed, one upon either side, in the antero-lateral region of the thorax.

Deviations from the normal number and position are rare; and although several cases of excess are recorded, there are very few of deficiency.

DEFICIENCY, AMAZIA (*a non, μαζος* mamma), that is, complete absence of one or both mammary glands. I have found one case only of congenital absence of one of the breasts,* unaccompanied by other malformations.

Dr. Froriep describes the examination of a woman in which the right mamma was absent, but concomitant with deficiency of the right anterior parts of the bodies and cartilages of the third and fourth ribs of the same side. M. G. St.-Hilaire states that M. Lousier† reports a case in which one mamma was deficient.

CASE VII.—DEFICIENCY OF MAMMÆ, CONCOMITANT WITH ABSENCE OF THE OVARIA.

In the Philosophical Transactions, 1805, there is a drawing from a dissection made by Mr. Pears and Sir A. Cooper, of a woman, aged 29 years, who might be said to have had no ovaria, and in whom the catamenial secretion never occurred; the usual appearances of puberty on the surface of the body were absent, the breasts were not more developed than those of the male, and the uterus was infantile.

Mr. Caillot‡ recorded a very similar case; and Dr. Laycock§ notices the relation existing between the development of the mammary glands, and the presence or absence of the ovaria.

* Marandel, Dict. d. Sc. Méd. xxx. 378.

† Diss. sur la Lactation, p. 15.

‡ Mém. de la Soc. Méd. de Paris.

§ Edinb. Med. and Surg. Journ. l. 32.

CASE VIII.—ABSENCE OF THE MAMMARY GLAND.

The subject of this case was a woman, aged 30, who died, eight days after delivery, of peritonitis. When the body was being examined, it was at once evident that, while the left breast was well developed and turgid with milk, the right side of the chest presented in the situation of the mamma only a superficial depression, which was limited at the sternum by an S-like border. At this point there was no trace of either a nipple or a scar, or any alteration of the skin; the skin was not only smooth over the whole of the chest, but was completely and easily moveable, so that there was no possibility of the breast having been removed by operation or disease.

The mammary gland on the left side was quite normal, and full of milk; but on the right side there was not a trace of glandular tissue to be found; there was nothing beneath the skin but a thin layer of adipose cellular tissue, which was traced from the sternum to the shoulder. The third and fourth ribs of this side, beneath the depression, terminated just before the anterior edge of the scapula, so that the anterior part of the chest, from that part to the sternum, and between the second and fifth ribs, was closed only by a tough tendinous membrane; the second and fifth ribs were normal, but were wider apart than on the opposite side. The cartilages of the third and fourth ribs of the right side did not appear to be deficient, for at their level there were portions of cartilage attached to the sternum, and united with the cartilages of the fifth and sixth ribs into one mass, which presented grooves on its surface, while indicating that it was probably composed of four pieces.

The greater part of the sternal portion of the pectoralis major was absent. The pectoralis major was entirely deficient, as well as portions of the serratus magnus: in their place was a firm

fibrous tissue, which easily yielded to pressure; the pleuræ, costalis et pulmonalis, and the lung were perfectly normal. On the left side all the parts of the chest were quite normally formed.—*Froriep's Notizen*, April 1839.

EXCESS.—PLEIOMAZIA (πλειῶν, plus; μᾶζος, mamma), signifies numerical excess beyond the usual complement of the mammæ; and observations regarding this anomaly are not very rare. I have been able to collect fourteen reported cases. In one of these, five mammary glands existed, and the relation of the circumstances and the dissection is minutely given by M. Gorré*. Most of the supernumerary glands secreted milk, although the woman did not in all cases allow their infants to suck them.

The situation of the supernumerary mammæ varies, and they have been seen arranged as follows:—in the inguinal region, below the normal pectoral breast, on the outer part of the thigh, on the anterior margin of the axilla, all on the same plane, in two parallel rows one above the other, and, in the case of five, the fifth was placed in the centre between the inferior row.

It is stated that in Idalium, Greece, and Egypt, the occurrence of this deformity is frequent, and it is attributed to the influence which the imagination exerts upon the pregnant woman whilst contemplating the statues of Isis and Diana, which are represented with numerous mammæ.

* Diet. d. Sc. Méd.: art. Multimamme, p. 529.

CASES OF PLURALITY OF THE BREASTS.

Instances in which *three* breasts have been witnessed are related by Dreger (Hygea, 1827 ; also, Lancet, xiv. 394 ; also, Arch. Gén. de Méd., xvii. 88) ; Bartolin (Cent. iv.) ; G. Hannæus ; J. Borel (Cent. i. obs. xlvi.) ; and Dr. Robert (Journ. Gén. de Méd. &c. c. 57). In the last instance the anormal gland was situated "on the outer part of the left thigh, four inches below the great trochanter. It was the seat of pain, and of sensations like the normal breasts at the catamenial periods. She had suckled several children with the third breast. The mother of this woman, æt. 50, had three breasts, all on the chest." M. Jussieu (Lancet, xii. 618—Philomatic Society of Paris) reports the case of a woman who had a third breast in the groin, and with which lactation was performed.

Instances in which *four* breasts have been seen are recorded by Sir A. Cooper and Dr. Lee (The Anatomy of the Breast, p. 15—Med. Chir. Trans. xxi. 266) ; by Shannon (Dublin Quart. Journ. of Med. Sc. Feb. 1848, 266) ; and there are five described by Messrs. Champion, Gardeur, Lynceus, &c. (Dict. des Sciences Méd., article, "Multimamme").

One case is minutely described by M. Gorré (Dict. des Sc. Méd. 529) in which *five* breasts existed. Four of them were very projecting, and arranged in two lines. The *fifth* was not larger than the breast of a girl before puberty. It was below, and in the middle, between the inferior row.

CASE IX.—QUADRUPLE MAMMÆ.

Mrs. ———, aged 35, was delivered prematurely of a still-born child on the 21st July, 1835. I was informed by the sister-in-law that she had two mammæ and two nipples upon each side, and that this peculiarity, which she was anxious

to conceal, had been observed ten years before, when her first confinement took place. I obtained leave to inspect the breasts, and was surprised to find there were two upon each side, as had been represented. The two on the same side were separated by a deep oblique depression. The inferior or pectoral mammæ, as they were afterwards termed by Sir A. Cooper, were fully developed, and in the natural situation; their nipples, areolæ, and glands, presented nothing unusual in their appearance.

Near the anterior margin of the axilla, a little higher up on one side, was situated another mamma, about one-sixth the size of the others. The nipples of these were small and flat, but when gently pressed, a milky fluid, which had all the characters of the milk secreted by the other breasts, flowed copiously and readily from several ducts which opened at their extremities. When milk was drawn from the lower breasts, a small quantity usually escaped from the nipples of the superior breasts; and when the draught came with the former, the latter invariably became hard and distended.

Mrs. ——— had previously borne several living children, and, five years before this period had twins, when she had a severe attack of uterine inflammation, and suffered much from painful distension of the two upper breasts. In consequence of the flatness of her nipples, she has never been able to suckle any of her children with these. The vagina, orifice of the uterus, and all the other organs, besides the mammæ, in this female are well formed.

When Sir A. Cooper saw the mammæ he said there could be no doubt that there were two on each side,—an *axillary* and a *pectoral* breast, and that nature had separated them completely from each other. He thought it to be without a parallel in this country.

Mrs. ——— was safely delivered on the 19th July, 1837, of a living child, which she now suckles with the pectoral

breasts, and the axillary breasts again present the same appearances as those which have now been described.

This case presents one of the best examples of quadruple mammæ in the human subject which has yet occurred.—Dr. ROBT. LEE.—*The Anatomy of the Breast*, London, 1840, by Sir A. Cooper, p. 15—17.

CASE X.—QUADRUPLE MAMMÆ.

Mr. Shannon reports the following case :—

Anne Merriman, æt. 34, was delivered of her sixth child in August last, in the South Dublin Union Workhouse. Mr. Shannon discovered that the woman had four breasts.

The supernumerary breasts are placed one at either side, above the ordinary situation of the mammary glands, and very near the margin of the axillæ. Each of them envelopes, and in a great measure obscures, the prominent fold formed by the free margin of the *pectoralis major* muscle. When distended they are each of a spherical shape, and of the dimensions of a large goose egg, being equal to about one-sixth of the size of the true breast, which, in this woman, is largely developed. Their position is also such that, when loaded with milk, they interfere considerably with the motions of the arms. On the left side the supernumerary gland is provided with a single nipple, whilst that on the right side possesses two. These resemble in all respects (except in size) the corresponding parts of the true breasts, and are, to all appearance, identical in structure with the true nipples. The lacteal secretion flows abundantly from them when they are squeezed. When the draught commences in the larger breasts, the supernumerary glands are also distended; and when the child is applied to either of the true nipples, the milk flows freely from the nipples of the smaller breasts, saturating the woman's dress, and thus occasioning her great inconvenience. A mole upon the right supernumerary

breast gives, in the illustration, an appearance of a third nipple.

All the nipples are surrounded by well-marked areolæ; but those of the true breasts are of a much darker tint than the others.

From some superstitious feeling, this woman could never be prevailed upon to nurse any of her infants at the smaller breasts, though, from the preceding details, it may be fairly inferred that they would have afforded a considerable amount of nutriment.

The woman was the daughter of a small farmer in the county of Kildare. None of her relatives had ever presented any anomalous condition of the mammæ; of this she is positively certain, for the most anxious inquiries were instituted on the subject by herself. She never had more than one child at a birth; all her labours were natural; and the generative organs, so far as can be ascertained by a vaginal examination, are perfectly normal.

She says the supernumerary breasts were first discovered about the period of puberty, and that they have enlarged in proportion to the true breasts during pregnancy and lactation. When the process of nursing is discontinued, they speedily diminish in size, and produce little or no inconvenience in their flaccid condition.

The editor adds—"We have just been informed by Dr. Santisson, of Stockholm, that an instance of four mammary glands in the *male* was seen in Sweden some years ago, and that an account of it has been published in the Proceedings of the Swedish Medical Society."—*Dublin Quarterly Journ. of Med. Science*, Feb. 1848, p. 266.

DISEASES OF THE BREAST OF THE ADULT FEMALE.

We now proceed to the description of those diseases

which attack the tissues composing the adult female breast. In its inactive condition it is an organ endowed with considerable nervous sympathies, which become highly exalted at each catamenial period, and during the time of pregnancy.

The diseases of the uniting fibre tissue will be the first considered, for inflammation in this organ is very common, and the products of this condition often give rise to most serious apprehensions.

OF INFLAMMATION OF THE BREASTS.—Inflammatory affections of the breast, or *mazoitis*, may arise at all ages after puberty, but they rarely occur unless associated with some disturbance of the secreting functions of the gland. Hence the greater number of cases of this affection which the surgeon is called upon to treat take place during pregnancy, soon after child-birth, or during the time of suckling.

Of inflammation and its results.—In this organ, as in others composed of similar textures, the stages and the products of inflammation are precisely the same. It must, however, be recollected that each mammary gland is an association of small glandular masses, or, in other words, that each lobe is a perfect and individual gland, enjoying, exclusively, its own vascular and nervous system, having its own proper duct, the single orifice of which is at the nipple. A large quantity of interlobular cellular tissue unites these lobes together, and the whole is at last surrounded by the investing fibrous membrane, or mammary fascia. Both around the margins and in front of the gland is

a large quantity of fat—the subcutaneous; and there also exists much fibre tissue in the nipple, between the ducts and under the areola. Hence, inflammation and its results may affect, and be limited to, the nipple or areola, the cutaneous and subcutaneous tissue, the lobes, individually or collectively, and the uniting fibro-cellular tissue: it may be either *intra*-lobular or *inter*-lobular, or both combined.

It would be idle to adduce reasons to prove the importance of attending to the above anatomical facts, when called upon to treat that disease to which I have applied the term MAZORITIS. The following is the division of the subject which I shall adopt:—

A. Inflammation and its results in the cutis and subcutaneous tissues covering—

1. The nipple.
2. The areola.
3. The gland itself.

B. Inflammation, and its results in the tissues behind the gland.

C. Inflammation, and its results in the tissues within the investing fibro-cellular envelope or fascia of the gland—

1. Of the lobes or gland tissue.
2. Of the uniting tissue.

INFLAMMATION OF THE NIPPLE AND AREOLA.—This disease may be limited to the cutis, or, extending more deeply, it may attack the subcutaneous tissues.

The nipple, enclosing as it does the terminations of the ducts, and being the part which is most subjected

to causes of irritation, is exceedingly liable to inflammatory affections. These occur, very frequently, during lactation, and especially during the first month, particularly with primipara. They may be the result of simple irritation from the pressure of the lips of the infant upon a peculiarly delicate cuticle, which becomes abraded, or they may result from some specific cause, even of syphilitic origin. The presence of aphthæ in the mouth of the infant is said to be very frequently the cause of this irritation. It is well known that minute follicular glands are scattered over the nipple, and it is in these structures that I believe the irritation is chiefly centred. The first difficulty which the mother experiences is a sensation of heat, then of tingling, or smarting, with very slight redness; the skin is harsh and dry, and upon careful examination one or more minute vesicles appear. These, in time, become rubbed, the cuticle breaks, and then a little oozing is noticed, with perhaps a minute ulcer or crack at the most painful spot. These appearances may be observed in any part of the nipple, from the apex to its base, or even upon the areola. As the mischief advances, the cracks extend, taking either a circular or longitudinal course; but the former is the most common. The pain now becomes very severe when the infant sucks; so great indeed as to induce many women to relinquish the duty. The fissures divide, and increase in extent and depth; the skin becomes entirely destroyed, or a circular fissure surrounding the base of the nipple, threatens its total destruction by sloughing,—a severe

form of this disease which sometimes occurs. The fissures and ulcers frequently bleed, and the infant, after sucking, vomits blood. The suffering and constitutional disturbance arising from the pain to which these ulcers give rise, determine, very often, most serious consequences.

One of the most important is inflammation of the deep fibre tissue, uniting together the tubes or ducts in the nipple, which, by becoming the seat of inflammatory effusion and subsequent induration, may interfere with the function of this organ by producing obliteration of one or more of the ducts. The inflammation extending may also implicate the glandular tissue, and give rise to deep and numerous abscesses.

Prophylactic treatment. — During pregnancy, as soon as quickening commences, and the nipple begins to be rather more developed, the part should be exposed to the air, washed with soap and water, and wetted occasionally, night and morning, with a little eau-de-Cologne and water, spirits of wine and water, or a medicated astringent lotion. These applications will perhaps render the delicate cutis less obnoxious to the repeated irritation of the lips of the infant; but they will not always prevent the formation of cracks. After birth, when first the child sucks, too much care cannot be taken to see that the nipple is properly cleansed after each application to the mother; and the secretion of the child's mouth, combined with the milk, should never be suffered to become dry upon the part, which should be well washed with warm water. Added

to this, the nipple should be protected from the pressure of the dress and bed-clothes by some resisting body; and this plan may be adopted from the first, by means of metallic shields constructed for the purpose; for it is far better to prevent the formation of cracks and fissures, than, at last, to be obliged to have recourse to means to effect their cure.

Treatment of fissures and abrasions.—When, however, fissures and abrasions do exist, the treatment required to cure them will in some measure depend upon the courage of the patient. Many of the applications, doubtless very useful, give rise to so much pain, that the sufferer will not permit their employment a second time; and in these cases soothing lotions will alone suffice.

When not very severe, *protection* and frequent ablution will usually produce cicatrization, with or without the addition, when the part is dried, of some mild powder, than which nothing is better than the carbonate of magnesia.

With cases, however, to cicatrize which much difficulty exists, close attention should be paid to the state of the secretions of the infant, and especially to the condition of the oral mucous membrane; for it is stated by some writers, M. Rossi especially, that aphthous inflammation of the mouth of the infant is the most prolific source of this condition of the mother's nipple.

Local applications.—Almost every astringent substance in the Pharmacopœia has, at one time or ano-

ther, enjoyed a certain reputation as a local application. It must, however, be remembered, that all local applications are not equally innocuous, and that, when applied to a part with which the mouth of the infant is in contact, for a longer or shorter time, their deleterious influence may be exerted to the detriment of the infant's health. The following applications in the form of lotions, applied with the necessary precautions, have their advocates:—*Alum*, or *borax*, in water or almond-mixture; *sulphate of zinc* or *copper*, gr. xv. to aq. ℥iv.; *nitrate of silver*; *tepid lotio plumbi*; *pyroligneous acid*, with white of egg; a saturated solution of *borax*. As ointments, *spermaceti*; *ung. hyd. nit.*; *ung. hyd. nit. oxyd.* with a little *opium*, and numberless ointments compounded of various ingredients, all more or less in vogue with the nurses, and most of which make the matter worse. I do not advocate the use of ointments.

The direct application of *argenti nitras* in the solid form is highly extolled, and, when endurable, is a valuable remedy; but its use is attended with great pain, although, after a second and third time, it is not so severe as the first trial.

Collodion is a very useful application, and preferable to most others.

Continuance and results.—These fissures often last a long time, and give rise to such intense pain in suckling as to induce the mother to desist altogether, or to give a large share of milk from the sound breast, should one alone be affected, which is often the

case. And it is this fact of one nipple only being diseased, which may be opposed to the statement before made, that in most cases the mischief arises from the state of the infant's mouth; because, if one be affected, why are not both nipples in a similar condition?

INFLAMMATION OF THE SUBCUTANEOUS TISSUE OF THE NIPPLE AND AREOLA.

The effects of irritation and inflammation are not always confined to the cutis and follicles, but, extending more deeply, involve the subcutaneous tissue, or even that between the ducts.

Uniting elastic fibre tissue.—I will here state that the fibre tissue of the nipple differs very widely from the common uniting tissue; indeed, when minutely examined, this organ presents very little of the latter structure. That of which it is formed belongs to the class of fibre, which enjoys, in the greatest degree, a contractile property. To the unassisted eye it has a pinkish tint, is very dense, and tough in texture. When magnified, it presents the appearances peculiar to the yellow or contractile fibre, which are sufficiently characteristic to render this tissue recognizable in any part of the body.

The advantage of this structure is at once clear. When the ducts become distended with milk, it would quickly flow away were there not some arrangement to produce moderate compression upon their extremities and closure of their orifices. And this condition is

found to exist particularly within a quarter of an inch of the apex of the nipple, where the calibre of the ducts is small, for here the contractile tissue abounds ; in fact, exists almost alone. When the nipple is placed in the infant's mouth, the warmth of this organ is sufficient to relax this contractile tissue, as we see in other parts, and the milk readily escapes. Again, that condition of the nipple in which it is said to be in a state of erection is nothing more than either a peculiar contracted condition of this fibre tissue, or the result of distension of the lactiferous tubes. To enable the infant to suck with facility, the nipple must be elongated ; and this condition is effected by the distended state of the tubes. But when the infant is not at the breast, then, by the contractile power of this fibre tissue, the nipple is retracted, and resumes its quiescent state.

The same firm, rigid, contracted, and erect position which it assumes when under certain states of mental excitement, is attributable to the property of this peculiar fibre tissue, and is analogous to that condition of the integumental investment (they generally exist simultaneously) termed "*cutis anserinus*, or goose skin," the production of which is attributed to the contraction of the same tissue in the cutis.

I am quite prepared to deny the existence of true erectile tissue in the nipple.

This contractile tissue is gradually lost at the periphery of the areola in the common subcutaneous uniting tissue of this region ; for here we find that adipose tissue is not developed.

Inflammation, (MASTITIS, *μαστος*, a teat, or nipple) attended with the usual symptoms and products, is observed in this region, and to the fissures and ulceration, already spoken of, the frequent origin of this disease may be ascribed. If the inflammation be not arrested, and resolution do not take place, suppuration becomes inevitable.

Abscess.—Abscesses within the boundary of the areola are not uncommon, and their symptoms and progress differ little from those commonly noticed. This space being bounded behind by the gland, is so circumscribed posteriorly, that the pus when once formed elevates the skin, which, being very delicate, soon permits the escape of the matter by ulceration. One, two, or several isolated collections of pus may be formed either simultaneously or consecutively. Small ulcers sometimes form on the areola, having their origin, perhaps, in the sebaceous follicles with which the skin of this region abounds, and the areolar glands may be the seat of inflammation and suppuration arising from an irritating cause, or from obstruction of their duct.

Diagnosis.—The diagnosis of these abscesses of the areola is not attended with difficulty. Nevertheless, it must be remembered that the ducts are liable to dilatation from obstruction, and that this may lead to inflammation and ulceration of their walls, and thus to a collection of fluid under the skin. The diagnosis will be assisted by the history of the case, the manipulation of the part, and the colour and aspect of the integument. Manipulation will indicate the existence of fluid, espe-

cially if the mamma be pressed forward from side to side; and the red, purplish, glossy, or polished appearance of the skin, with perhaps slight desquamation of the cuticle in one point, will indicate the situation in which Nature is about to effect an aperture to allow the exit of the pus.

Treatment of inflammation.—If the gland be in an active state, that is, if the woman be suckling her infant, cold applications must be rejected, but warmed evaporating or saturnine lotions may be applied. Local depletion by means of a few leeches may be required according to the powers of the patient.

The general health, particularly the alvine secretions, must be carefully attended to; antimonial cathartics, their action being continued if the powers of the patient permit, being administered.

When resolution does not seem likely to take place, fomentations and soothing poultices must be applied, attention having been given to the probable cause of the mischief. Lactation need not be suspended, but if the pain from the efforts of the infant be very severe, recourse must be had to some mechanical means to relieve the gland of its secretion. So soon as the presence of pus is detected, a tolerably free opening should be made, the pus allowed to escape spontaneously, and all manipulation avoided.

Direction of incision.—The direction in which the incision is made is a matter of considerable practical importance. It should always be made in the direction of radii passing from a centre which is formed by the

nipple, since as the ducts converge to this centre the incision will then be parallel to them, and thus their transverse division avoided. The part should then be poulticed lightly, and warm fomentations used at each dressing. Due attention of course must be given to the patient's general health, low diet or tonics being given according to the indications.

These abscesses do not require a long time to cicatrize, unless complicated with some disease in the ducts, such as ulceration of their walls.

Then, indeed, the case becomes very complicated, and it is always necessary to give up suckling. If this be not done, troublesome fistulæ form, the milk runs away through the artificial aperture, and great trouble is the result.

CASE XI.—ABSCESS WITHIN AND BENEATH THE AREOLA.

An unmarried woman, aged 19 years, of plethoric and healthy appearance, a domestic servant, and accustomed to work hard, states, that for the last two or three months she has experienced soreness in the right mamma. The catamenia appear regularly. The mammary glands are well developed, the nipples presenting the usual appearances of the virgin state.

Upon the evening of Saturday, February 5th, 1848, after a hard day's work, the right mamma became painful and swollen, with an appearance of redness. This was in the neighbourhood of the nipple, and within the areola. Upon the Monday all the symptoms had increased. I saw her, for the first time, on Wednesday the 9th. The skin over the right mamma was highly inflamed, being, in the region of the nipple, very painful, red, and swollen. She also complained of pains extending

to the right axilla. Her general health was very little affected. She had not had a furunculus in any part of her body; but the appearances of the mamma differed very little from those in this affection.

She had not treated it medically. Poultices were applied, and mild aperients administered. On Sunday, the 13th, fluctuation being very distinct, the nipple quite retracted and lost sight of, the pus was evacuated by making an opening with a lancet. It was of a very healthy character.

She experienced great relief on the evacuation of the matter, and the next day she expressed herself free from pain.

Pus was discharged from the wound, and one or two trifling sloughs of cellular tissue, for a few days, when the incision was completely cicatrized, and she was cured. No hardness or induration of the glandular tissue remained, and the nipple was quite restored to its normal condition.

CASE XII.—ABSCCESS BENEATH AREOLA, FIVE WEEKS AFTER
DELIVERY.

M. Harber, aged 43: the mother of seven children. Describes herself as an inflammatory subject. She has suffered for some years with a severe varicose state of veins of both inferior extremities, and while pregnant with the last child she has been much lowered in consequence of their dilated condition.

She was delivered of her last child five weeks since. She suffered severe pain in the right breast three weeks since. After poulticing for fourteen days, pus was discharged. This opening healed in a day or two.

There is at this time (May 23d) an accumulation of matter on the left side of the right nipple, and she endures much pain. I would have opened the abscess, but she would not submit, and I therefore ordered a poultice of bread and water.

May 24th.—I opened the abscess. The pus discharged was

very healthy. The abscess is situated behind the areola, and does not at all enter into the substance of the gland.

May 26th.—A considerable quantity of pus has escaped since Saturday; but to-day the opening is closed up, and pressure on the wound causes no pain. From the sensations she experiences in the breast, she fancies another abscess is forming on the other side of, and below, the nipple of the same gland. There is slight enlargement, but no inflammation, of the right axillary glands. Hot fomentations.

R. Quinin. Disulph. gr. ij., ex. Inf. Rosæ C. ʒj. bis in die sumend.

May 30th.—She is improved in every respect. Has experienced great relief from the hot fomentations. There is no appearance of another abscess. She has continued to suckle when able.—Pergat.

June 2nd.—Is going on very well. Takes one pint and a half of porter a day, and meat once.—Pergat.

June 9th.—Since the last visit there has been a slight discharge of pus from a small superficial abscess in the areola, which is now entirely healed.—Pergat.

June 18th.—Feels strong and well. The left breast is inclined to form knots or nodules. She once suffered from abscess in it.

INFLAMMATION OF THE SKIN AND SUBCUTANEOUS TISSUES COVERING THE GLAND.

The skin of this region is obnoxious to the common cutaneous affections,—such as eczema, lepra, the exanthemata, or syphilitic affections; but I should be carried too far away from the subject matter of this essay, were I to dilate upon these diseases.

Phlegmon.—Common phlegmon, however, often attacks the skin and subcutaneous adipo-cellular tissue, the symptoms of which do not differ in any essential points from those so well known. The extent of surface affected varies considerably, and the disease may occur at any period either in the quiescent or active state of the gland. Usually limited to one spot, the skin appears *red from the first*, there is a sensation of soreness, and the temperature of the part is elevated. As effusion takes place there is more or less swelling, tension, and pain upon manipulation. Unless a very large extent of surface be affected, and the powers of the patient weakened, the constitutional disturbance is not severe. A sensation of lassitude and weariness may be experienced, and the secretions may be interfered with; but beyond this the healthy functions are not much interrupted.

Phlegmon may arise as the result of irritation from without,—that is, of disease in the skin itself, from irritation from within, or some inflammatory affection of the gland; or, as the result of some morbid condition in the tissue of the part itself. It may exist for a week or a fortnight, and, even after this long time, resolution may occur. It most frequently, however, terminates in suppuration, and the formation of abscess.

Subcutaneous Abscess.—Abscess usually occurs singly, but occasionally one forms after another in succession. It is generally clearly circumscribed, may be situated over any part of the surface of the gland, although frequently in the most depending region, and

it rarely exceeds one or two inches in diameter. The usual symptoms of subcutaneous suppuration attend this variety of abscess. The diagnosis will be formed from the *history* of the case, *manipulation*, and the *colour* and appearance of the skin.

Treatment.—The usual principles laid down for the treatment of phlegmon are available in this disease.

The *local* treatment consists in the application of evaporating lotions; leeches, if the tension and pain be severe and the powers of the patient will permit, applied around the inflamed part, not upon it; and in protection of the part from irritation.

The *general* treatment, of aperients, restraint in diet, perfect rest in the recumbent posture, diaphoretics, and antimony in nauseating doses, if the health of the patient will allow it.

If resolution do not occur, and suppuration appear inevitable, fomentations must be employed; and the lancet should be used as soon as fluctuation is felt, and in the situation where Nature is about to effect an aperture. A free incision should be made, and the pus allowed to escape spontaneously. Pressure should be particularly avoided. Sloughs of the cellular tissue sometimes come away in a day or two after the abscess has been opened. Fomentations and poultices, or wet lint, may be applied after the excision is made, and in a few days, gentle pressure, with well-applied stripes of plaster and a roller, will quickly effect a cure.

As these abscesses frequently occur among the poor

and badly nourished, it is often necessary to assist the reparative powers of Nature by good food, tonics, and even an allowance of porter or stout. If the woman is suckling, she must continue to do so.

The results of this form of abscess are not very important; more or less induration may occasionally be felt for a short time, and the cicatrix continues through life.

The intimate communication between the adipo-cellular tissue around the breast, and the cellular layer behind the gland, sometimes induces the extension of the disease to the sub-mammary region; namely, by continuity. The inflammation may also extend to the interlobular cellular tissue: but these two complications are rare.

The worst form of this disease is diffuse phlegmonous inflammation, which attacks the cellular tissue around the entire organ, destroying large portions of it, as well as part of the gland tissue itself, and at times giving rise to fatal results. Cases XIII. XIV. XV. are illustrative of this disease.

CASES OF DIFFUSED PHLEGMON.

CASE XIII.—In the thesis of M. Gendrin (*Thèse, Paris*, 1815, No. 282) there is a case of Dupuytren's reported, in which both the breasts were, in succession, attacked with diffused phlegmon, which caused mortification of the subcutaneous cellular tissue and skin. The case was, however, cured.—*Nélaton*, p. 38.

CASE XIV.—In a case reported by M. Godin, a sub-mam-

mary abscess gave rise to the disease. The patient died, and at the autopsy the whole of the subcutaneous cellular tissue was found to have been attacked and destroyed by a serous and sero-purulent infiltration, with separation and mortification of the skin over half the breast. Behind the gland there were many collections of pus, badly circumscribed, which communicated with that in the subcutaneous tissue, at the circumference of the gland, and by means of sinuses running through its substance.—*Nélaton*, p. 38.

CASE XV.—M. Denonvilliers reports a case in which the diffused phlegmon attacked the left breast soon after the right had been removed for carcinoma.—*Bérard*, p. 36.

INFLAMMATION AND ITS RESULTS IN THE TISSUES BEHIND THE GLAND.

Attached to the posterior surface of the mammary gland is a layer of fascia; and this is connected with the pectoralis major muscle, by areolar or uniting tissue. Adipose tissue is not, normally, developed in this situation,—that is, between the gland and muscle.

Inflammation may take place between the fascia of the gland and that of the muscle, and pursuing its usual course, terminate in suppuration, and form an abscess. But another form of abscess may arise behind the gland, the result of injury to the parts beneath, or arising from a local source of irritation. Contusion of the ribs, and injuries of the periosteum, may produce necrosed bone, and pleuritic effusion and empyema may occur, and make its exit through the thoracic parietes. Of the former, a very interesting case is

cited (Case XXI.) These last, however, are not very rapid in their action, and therefore are usually placed in the category of chronic abscess.

The symptoms of acute sub-mammary inflammation are as follows :—A sense of weight and fulness is felt, scarcely amounting at first to pain ; the whole organ appears swollen and pushed forward ; the skin is of its natural hue ; after a time, a deep, dull, or even throbbing pain is experienced, the breast becomes conical, the skin tense, and the nipple projects. The cutaneous veins are turgid with blood, and there is pain when the breast is compressed against the chest, or moved from side to side. Any movement of the shoulder-joint likewise causes an increase of pain.

The constitutional excitement varies according to the urgency of the local mischief ; it may be very severe, and render the condition of the patient extremely hazardous.

Treatment.—During the inflammatory state, and before suppuration is established, leeches and evaporating lotions may be applied, and purgatives and diaphoretics administered ; but if, from the history of the case, the cause of the mischief should appear to be in the parietes of the thorax—a necrosed rib, for example—suppuration must be encouraged. With this view, warm fomentations and continued warmth with moisture must be applied.

So soon as fluctuation can with certainty be detected, a free incision should be made, and the pus evacuated. When the abscess appears to secrete a little pus only,

and there exists no immediate source of irritation, strapping, well applied, and bandages, will be found to expedite the cicatrization.

Sinuses, difficult to heal, often follow these abscesses, and if pressure fail to cure them, stimulating injections, or a probe coated with nitrate of silver, may be advantageously used.

INFLAMMATION OF THE GLAND,

MAZOITIS ($\mu\alpha\lambda\omicron\varsigma$, the breast) may be either *acute* or *chronic*, confined to one lobe, or implicating several.

Acute inflammation.—The *constitutional* symptoms are rigors and severe pyrexia.

The *local* symptoms are shooting pains in the breast, and throbbing, very severe if several lobes are affected, extending towards the axilla. The secretion of milk is suspended if the entire gland be involved ; diminished if two lobes be affected.

Upon manipulation, a firm, hard, solid tumor is discovered in the breast, of an oval shape if one lobe be the seat of the disease, but varying in shape if more participate. At the commencement, the tumor is circumscribed ; pressure increases the pain, which is of a dull aching kind, and lasts some time after the removal of the hand.

At this stage, which is that of congestion with slight effusion, the skin is not affected, but if the disease does not speedily yield to the treatment adopted, the gland becomes manifestly increased in size, either generally or

locally, the skin becomes injected, assuming a dusky red tint, its temperature is elevated, and it presents a polished appearance.

When several lobes are affected, the swelling offers a nodulated or irregular surface to the touch, and sometimes depressions between the lobes may be discovered.

Should the inflammation advance, all the symptoms, both constitutional and local, gradually increase. The pyrexial symptoms become intense, the throbbings and pain more severe, the swelling diffused, the temperature of the skin elevated, and its redness of a deeper hue. At this time a sense of fluctuation may be communicated to the finger, or the existence of pus may be indicated by an œdematous condition of the skin over some part of the swelling.

The exciting causes of inflammation.—The exciting causes of inflammation of the mammary gland tissue may be local or general. The *local* are, contusions, the direct application of cold, or retention of the secretion for too lengthened a period, the irritation arising from sore nipples, or probably an extension of the cutaneous inflammation along the ducts, excessive movement of the arms during suckling, and obstruction of the milk ducts from inflammation or imperforation.

The *constitutional* causes are, mental emotions, irregularities in diet, an excessively depressed condition of nutrition, and all circumstances tending to impair the general health of the individual.

The period of the attack, and the persons most predisposed to it.—Inflammation of the mammary gland occurs most frequently during the puerperal month, and with primiparæ.

It may, however, occur during the last months of utero-gestation, at any period during lactation, or, after subsequent confinements. It very rarely indeed arises at the time of weaning.

Delicate, strumous, and sickly females, are most liable to mazoitis.

Tissues affected.—Although it is stated by some authors that inflammation may attack the glandular and interlobular cellular tissues separately, I believe that it is not possible to diagnosticate with accuracy whether the one or the other be exclusively affected; nor is it very likely that one alone, and not the other, should be the seat of this disease; nor, in a practical point of view, is it a matter of much importance, for, if inflammation exist, it is to be subdued, and the treatment likely to prove efficacious in the one case would be proper in the other; and, supposing abscess to form, no treatment of which I am aware would be more exclusively applicable to the one case than to the other.

I conclude, therefore, that, although the distinction be physiologically correct and theoretically admissible, that the practical value is not sufficient to demand the devotion of a chapter to each.

Terminations of Mazoitis.—Should resolution take place,—a termination which is rare,—the local symp-

toms gradually subside in a few days, leaving, perhaps, only slight induration.

But when this desirable result is not obtained, the local inflammation terminates in suppuration, with the common symptoms of abscess. Redness, with more or less œdema of the surrounding skin, desquamation of the cuticle over the centre, or towards the most depending part of the swelling, will be observed; or, if the disease has been left to nature, where "pointing" has taken place. Even an appearance of sloughing of the skin may sometimes be noticed in the centre of the swelling.

Treatment.—When inflammation of the breast commences, its progress may be arrested by antimonials, administered as recommended by Dr. E. Kennedy. With women who can bear the depressing effects of *antimony*, this drug is, without doubt, a most valuable remedy. It may be administered at first with a saline cathartic, after which its nauseating effects may be continued according to the results.

Resolution frequently occurs under the influence of antimony,—indeed, according to the testimony of those who have administered it extensively, in almost all cases. Leeches, and saline purgatives—their action being kept up to procure watery evacuations—are also highly extolled.

But if called to a case in which suppuration appears inevitable—or, indeed, when there is every reason to believe that pus has been formed, fomentations must be applied, and as soon as pus is detected by fluctuation

a free opening should be made, and the contents allowed to escape. Pressure should not be used upon the part to expedite the flow of pus, but the opening ought to be sufficiently extensive to admit the ready efflux of the fluid, and perhaps somewhat solid contents. Lint, wetted with warm water, may be applied, and upon the second or third day—if the mamma be heavy, large, and pendulous—it must be strapped up with plaister, and well bandaged.

Most of the ill effects resulting from abscess—such as their consecutive formation and sinuses—occur for want of proper local support; and, therefore, in all cases in which the mischief appears to be deep, this plan should be adopted. I can testify to the advantage accruing from its application; and others, who have pursued the practice extensively, are equally ready to give it their support. Nor are poultices to be long continued, but only a small piece of wet lint is to be placed over the wound. Even in the first stage of the attack, before there is any suppuration, strapping the breast up with plaster, and then bandaging it, prevents further mischief.

When suppuration has taken place, and the powers of the patient are low, a good diet must be recommended. I have repeatedly seen the ill effects of starving patients, who are at the same time suckling their infants, when they labour under milk abscess, and who, after returning to their usual food, with porter or stout in moderation, have speedily recovered strength, and the wound has cicatrized.

Lactation with the affected breast, on account of the pain it produces, is often suspended; in fact, cannot be continued. But, when the abscess is healed, there is no reason why it should not be resumed. This may be done, even after two or three weeks' suspension, without difficulty or fear of ill consequences.

CASE XVI.—HARD SWELLING OF THE MAMMARY GLAND, DISPERSED.

August 28th.—Mrs. Bailey, ætat. 37. Mother of five children. Has been suckling the last child for thirteen months. Much more with the left than with the right breast. She has suffered from excoriations about the right nipple. On the 22nd, six days since, she experienced shooting pains in the right mamma, and general shiverings, after being, as she describes it, "very bilious." She had never suffered from any previous swelling.

There is now a very firm solid swelling in the right mamma of considerable size, and very painful on pressure; no discoloration of skin. The left mamma secretes freely; the affected one, she thinks, "has stopped." She is much pulled down by this long suckling.

To wean the child gradually, apply warmth, and to take, twice a day—

℞ Potass. Hydriod.; Ammon. Sesquicarb. aa. gr. v. ex. Decoct. Sarzæ Comp. ʒiiss. bis die.

September 1st.—Very much improved. The swelling less, and softer; no pain, only occasional shooting. Appetite improved. Gradually weaning the child.—Pergat.

September 8th.—No pain, not even shooting. The swelling is less, but there are still a few hard, knotty cords. Her general health is greatly improved. Well.

℞ Potass. Hydriod. gr. v.; Decoct. Sarzæ C ʒiiss. bis die.

CASE XVII.—BURROWING MAMMARY ABSCESS.

———, ætat. 39, the mother of three children, in a most delicate and emaciated condition, states that she had, before her confinement, been living upon bread and butter, and working very hard. With her two first children she had not laboured under any mammary disorder; but three weeks after the birth of the third, the right breast began to swell, and in two weeks more, after poulticing it, the integuments gave way, and pus was discharged. She now suckled the infant with the sound breast only. I first saw her three months after her confinement, and at that time there were four openings in various parts of the breast discharging pus. Others had formed and healed.—To apply a poultice, and to take porter and quinine, gr. ij. ter die. She continued to suckle with the left breast.

There had been as many as seven openings: the first one broke spontaneously; it was close to the nipple. The other collections, when close to the surface, were opened successively. The openings communicated by sinuous passages with one another.

With good and nutritious food she quickly gained strength, the openings cicatrized one after the other, and with the support afforded by strapping all were cured in a few weeks.

CASE XVIII.—INDURATION OF BASE OF LEFT BREAST. THE RIGHT HARD, LIVID, AND IMMOVEABLE, WITH FISTULOUS OPENINGS. SUCKLING AT SAME TIME.

Mrs. Rowe, an object equally of poverty and disease, consulted me in spring last on account of complaints apparently cancerous in their nature. She was a middle-aged woman, of a very firm mind, and, previous to her illness, had been of excellent constitution. Poverty compelled her to suckle her

infant, then several months old, which did not seem constitutionally diseased, although occasionally sickly; owing, perhaps, to a vitiated state of its mother's milk. Both the breasts of this poor woman were morbidly affected. The *left one* had an induration at its base, about the size of an egg, and suffered those frequent lancinating pains characteristic of incipient cancer; whilst the *right* was hard, livid, immoveable, and raggedly fistulous in several places, from which issued fetid, bloody, and corrosive matter. The *former (the left)* supplied the child with milk, but the *latter (the right)* had lost the papilla, and no longer secreted the fluid. According to the emphatic description of my patient, the pain of this breast resembled "the frequent darting of fire through her flesh." The pains of the right breast sometimes shot into its fellow, and often towards the axillary glands of the same side, which were more diseased than those of the other. But besides, pains analogous to the above assailed her uterus, accompanied by a discharge of foetid sanies from her pudenda, which excoriated the neighbouring parts; and hence it seemed probable that a relation subsisted between these and her other complaints.

Under a combination of such calamities, with extreme poverty, her bodily vigour had considerably declined, though it still enabled her to walk a few miles from the country, to visit me once in the week. Her pulse was generally quicker than natural, but particularly in the evening, when she occasionally became feverish. Her appetite was much impaired, and she rested ill at night. After severe fits of her pains, she sometimes experienced faintness, succeeded by nausea, shiverings, and cold sweats.

Such was the situation of my patient at her first visit to me. How long she had been so held previously I cannot precisely say; but I am led to think she told me her complaints had then continued for several months, and had commenced some time prior to the birth of the child. She had, however, con-

sulted several practitioners in Maidstone before my arrival there; they had humanely assisted her, but considered her disorder to be a cancer, too deeply rooted to admit of eradication even by the scalpel.

It seemed possible, notwithstanding, that we might all have mistaken the real nature of this case; and the encouragement of such a hope was, at any rate, calculated to increase the perseverance both of the patient and the physician.

With a view to promote a more healthy action in her breasts, ʒj. Ung. Hyd. fort. was rubbed into them daily; and poultices, composed of bread and milk, or of the recent leaves of *Cicuta*, were applied to that which was ulcerated. Injections of alum, dissolved in decoction of oak-bark, and occasional opiates, were also employed. Having followed this plan for about three weeks, her mouth became slightly affected by the mercury, but with little amendment of her frame. About this period I put her into the way of procuring a diet of rice and milk, instead of bread and tea, which had before been her only nourishment.

Continuing the moderate effects of her former medicines, she now took Pulv. fol. cicutæ, gr. ij.; Pulv. Opii, gr. iij. vel iv., in the day; these were formed into pills, one of which she used every two or three hours, or according to the urgency of her symptoms.

The quantity of the *cicuta* was gradually increased to six or eight grains in the day, but without manifesting any distinct operation; and that of the other remedies was regulated by their effects upon her system. The mercury never produced salivation, nor the *opium* and *cicuta*, aught but the alleviation of pain. From the time she began to take the pills till she laid them aside, a regular amendment was evident. Towards the close of the second month of her attendance upon me, she began to disuse all her medicines by degrees, and very shortly afterwards took her final leave of me, seemingly without any ailment.

But, although I confess I am satisfied that a considerable portion of healing power was produced by the remedies exhibited to my patient, yet I think it my duty to own that I am convinced she was greatly indebted also for her recovery to the attentions of some families in Maidstone, and particularly to the sisters of a neighbouring nobleman, noted alike on account of the extensive comfort they diffuse around them, and their judicious mode of administering it to the poor and to the distressed.—Reported by Thos. M'Whister, M.D., of Newcastle-upon-Tyne, Dec. 1801, in the *Medical and Physical Journal*, vol. iii. p. 51.

CHRONIC ABSCESS.

This is a disease which simulates so closely many of a more serious character, that the formation of an accurate diagnosis becomes a matter of the greatest importance. In several works devoted to the diseases of the breast, attention has been drawn to cases of this kind, which have been condemned as carcinoma, but have terminated in abscess. Indeed, operations have been commenced for the removal of tumors in the breast, and the surgeons have merely incised a collection of pus.

Several of the cases, too, described as "scrofulous tumors,"* terminate in chronic abscess; and perhaps the line of demarcation between these diseases is not very marked. A scrofulous tumor is a collection of cacoplastic matter effused as the result of a slow action—not, perhaps, always of an inflammatory nature; and a

* Lloyd on Scrofula, p. 85.—Warren on Tumors, pp. 215—25.

chronic abscess contains much of the same ill-organized material, with the addition of serum. Professor Rokitsky* does not admit the existence of scrofulous tumors in the breast, and, with the exception of the case occurring to M. Gerdy†, which is insufficiently reported, I know of no other case on record. Mr. Lloyd's cases‡ are clearly instances of chronic abscess.

Again, this form of abscess often depends upon some cause giving rise to chronic inflammation,—as, for example, disease of a rib.

From the facts which I am about to relate, I trust that an accurate diagnosis between these cases and new growths may be more easily formed.

Age.—Chronic abscess may form at any age, but it most frequently occurs in early life.

Social condition.—Women, both of the married and single state, are liable to this disease; neither is it found more frequently in either the prolific or the sterile female. It generally commences *during* suckling.

The general health.—A more or less strumous diathesis may be observed to exist contemporaneously with this disease, although the general health may be tolerably good, or suffering, apparently, from the mere existence of the swelling in the breast.

History.—Patients usually state that a hardness has gradually formed in the part. They have, perhaps, been prevented suckling with the affected breast in

* Rokitsky, Anat. Path. ii. 341.

† Nélaton, Des Tumeurs de la Mammelle, p. 47.

‡ Op. cit.

consequence of some malformation or soreness of the nipples, and the lactation has been continued with one breast only. Upon inquiry, the affected breast, or immediate region, has been subjected to contusion, not of slight character, and scarcely remembered, but of a more severe nature.

Situation and size of the induration or abscess.—A swelling may be felt in any part of the organ—behind the gland or around it. It may occupy a larger or smaller portion—being confined to one lobe, or implicating several. Isolated tumors may be felt in the same breast, which by degrees coalesce. The swelling generally blends with the tissue of the breast. The size varies greatly, but never attains extraordinary dimensions. The abscess may burrow in any direction behind and through the gland.

Patient's sensations.—No pain is felt in the part at first; in some cases not even uneasiness. In others, pain induces the sufferer to examine the part, but a lump is merely felt, which, upon pressure, is rather tender. As it becomes larger the pain increases, particularly in one point. Manipulation—even rather rough handling—sometimes fails to produce pain.

External appearances.—At first, and often for a long time, the skin presents no discolouration. The nipple appears retracted, but often in consequence of congenital malformation. The whole gland is enlarged, and the veins may be varicose or congested. As the disease advances, redness of the skin becomes apparent, and adhesion between the tumor and skin takes place.

Œdema of the cutis may also appear, and the sebaceous follicles become more distinct than usual. The cuticle now looks glossy, and perhaps desquamates, and at last fluctuation is detected. Ulceration of the skin may, however, take place, and with much surrounding redness, before the pus escapes.

Manipular indications.—Considerable solidity is noticed at first, with induration and, sometimes, adhesion to the chest. The surface of the lump is uneven, but yet it does not differ in shape from an indurated and enlarged lobe or lobes. After a time a softness is perceptible in the centre of the mass, and the surrounding tissue is resisting. The induration and swelling are not circumscribed, but they blend imperceptibly with the surrounding gland tissue. The induration is firm, solid, and resisting, but never of stony hardness; and it is not always confined to the same lobe throughout the entire duration of the complaint.

Right or left gland.—Both glands are rarely simultaneously affected.

Duration.—Tumors of this kind may continue for a very long time in the substance of the breast, and at last suppurate: so long a time, indeed, as five years, eighteen months, or many weeks.

Treatment.—The therapeutical means to be adopted in these cases are such as are calculated to improve the general health of the patient. If there be good reason to suppose that the induration depends upon chronic inflammation, and that absorption be no longer probable, suppuration may be encouraged.

Resolution or dispersion of the induration may be assisted by pressure with stripes of plaster and a bandage, or the application of Tinct. Iod. comp.

Aperients, alteratives, tonics, and stimulants may be given with advantage, and good air and diet should be obtained.

Progress.—Continued suppuration often follows the opening of these abscesses, which it is difficult to arrest; and sinuses, running in several directions, frequently give much trouble; but the division of the gland is never required. They are to be treated with injections and pressure or seton. I found the following method very efficacious in curing several sinuses which had continued many months. A double silk was passed along the sinuses, and, one of its ends being passed through the loop, they were tied together sufficiently tight every other day, or less frequently, according to circumstances, until all the tissues included in the ligature were divided. The sinuses healed up gradually from the bottom, and the cicatrization was at last effected. Induration, also, very often continues a long time, which, if it occurs late in life, gives rise to anxious forebodings.

Result.—Cases of this kind are invariably cured. It is also gratifying to the surgeon to be able to state that very often the gland resumes a healthy and perfect condition.

CASES OF CHRONIC ABSCESS OF THE BREAST.

CASE XIX.—A married woman, æt. 33, mother of four children,

strong, and of good general health, showed to me "a tumor" in the left breast. Her last child was born four months since, and she has continued to suckle the infant, until ten days since, with the affected breast. She first felt the lump about six weeks after her confinement. The left breast, even before marriage, was always rather larger than the right. She had not used one gland more than the other. The superior half of the left breast was indurated, and it began on the inner side of, and rather below the nipple. The nipple was very sore during her pregnancy; it is large and full, and around it a very deep furrow exists. The progress of the disease has been very slow, and she has never felt any pain "worth speaking of." A firm, doughy induration, which blended with the tissue of the gland, was felt near the nipple; under the areola were two soft points, probably distended ducts, for the secretion could be pressed from the nipple. No discoloration of the skin existed, but there was fulness of the infra-clavicular region. The lymphatics leading to the axilla were indurated, but the glands were normal. The whole breast was strapped up, and then bandaged, leaving the nipple exposed; tonics were administered, and after about a month fluctuation became distinct. The pus was allowed to escape, and after the expiration of a week or two the part was quite well.

CASE XX.—A married woman, *æt.* 24, and mother of one child, 17 months old, and which infant she had suckled for about three months, applied to me on account of a swelling in the left breast. Six weeks since she perceived a hardness underneath the nipple. She did not experience any pain therein, and pressure was endurable. She had never suckled with the left breast, the nipple being imperfect; it had been often full and knotty, but this condition was dispersed by friction.

When I saw her the lower and outer fourth of the gland was indurated, solid, and painless on pressure. The nipple was

depressed, and the skin over the swelling somewhat adherent. Milky fluid could be expressed from the nipple. Her aspect was healthy but delicate; the catamenia were regular, and her health was good. Although the disease had been called cancer, and an operation for its removal proposed by a surgeon of much older standing and more experience than myself, I encouraged the hopes of the patient, and requested her to delay this formidable treatment. At her next visit I saw that the superficial veins were very large; the lymphatics passing to the axilla were rigid and wiry, and one gland was enlarged; the skin was rather red, and, towards the axilla, swollen. In a few days the skin was more red, and the part was painful when pressed. About fourteen days after her first visit, all doubt as to the nature of the swelling was removed by an abscess bursting, and discharging a large quantity of pus. The discharge continued abundant, although tonic medicines were administered, and the part was strapped up. It was not until three months had elapsed that the breast was quite well.

CASE XXI.—ABSCESS BEHIND THE BREAST, OCCASIONED BY A
FRACTURED RIB.

A lady of a delicate constitution, æt. 28, whilst leaning over the ledge of a window, to remove a bird-cage which had been placed on the outside, received a hurt about two inches below the right breast, which at the time was attended with considerable pain and a sense of internal uneasiness. Upon examination soon after the accident there appeared a small tumor and discoloration of the skin; the part was painful to the touch, but respiration was free; she had no sickness at stomach, nor any other unfavourable symptoms. By the application of *Lin. Sapon. c. Opio*, in a short time the tumor diminished, and the part assumed its natural appearance.

In August she suffered from frequent sickness at stomach and violent retchings, and after a time she felt a pricking pain, at times extremely acute, in the side where she received the hurt—just below the right breast—where there appeared a small enlargement, but without any discoloration, as formerly observed. About six weeks after, the sickness at stomach and spasms were entirely removed, but there still remained a small enlargement of the breast, extending to the part where she received the hurt. However, nearly two years elapsed before there was sensible increase of the tumor; meanwhile she used the cold-bath in the summer and autumn months, and generally enjoyed good health.

Towards the end of 1795, she at times complained of a pricking pain where she had received the hurt; the skin was somewhat discoloured, the breast considerably enlarged, and it became uneven on its surface, attended with irregular pains shooting into the axilla and adjacent parts. A discutient plaster was applied to the tumor, after which it rapidly increased in size, with acute pain in the breast, and evident symptoms of the suppurative process going on. The lady having used considerable pressure upon the part by means of tight bandage, the fluid made its way into the breast, where it appeared to be contained in different cysts, which were moveable and circumscribed, and the glands in the axilla became greatly enlarged.

January 1796, two eminent surgeons were consulted, and were of opinion that the disorder had a cancerous tendency; however, they thought it advisable to try the effects of some powerful discutient previous to the operation. Accordingly, the following cataplasm, warm, was applied to the part, and renewed twice a day:—

R. Sal. Ammon. crud. ʒij.

Acet. Vin. alb. ʒiv.

Aq. pur. ʒiv. M.

Farin. lini. q. s. ut fiat cataplasma.

This was continued a fortnight without producing any alteration. A blister was now applied to the most depending part of the tumor, and kept open nearly three weeks with *ceratum sabinae*. This was of necessity discontinued.

At a second consultation, the surgeons above mentioned were unanimously of opinion that there could be no doubt of the tumor being a real cancerous affection of the breast, and contended that it had a connection with a steatomatous enlargement of her neck, which they imagined proceeded from a scrofulous habit, the tumor being at this time much inflamed and enlarged.

The surgeons were of opinion that immediate recourse should be had to the operation, in order to remove such part of the breast as should be found cancerous. Being myself of a different opinion, I requested the operation might be deferred about a week, especially as it appeared to me that Nature was then making an effort which I had no doubt would soon relieve the patient. Emollient cataplasms were now applied twice a day to the breast, and the bark, in substance, was ordered to be taken freely.

On the 29th of March, when raising herself in bed, an opening was observed in the abscess large enough to admit a common probe, from whence issued a small quantity of lymphatic fluid; but as the opening was not sufficient to allow the tumor to empty itself freely, I made a puncture with a lancet in a longitudinal direction, about three quarters of an inch in extent, at the thinnest and most depending part of the abscess, which instantly discharged about a pint and a half of well-digested pus, tinged with blood. A pledget of digestive was applied to the orifice, and the poultice continued some days. The lady being much weakened by the discharge, a nourishing diet with port wine was recommended, and a drachm of Peruvian bark in powder four times a day, with an opiate at bed-time.

Soon after, several small exfoliations from the rib, extremely

irregular on their surfaces, and of a carious appearance, passed through the orifices, which continued open, with a considerable discharge, upwards of two months. During this time another opening formed about an inch below the former, which discharged a quantity of purulent matter, and a number of exfoliations came away, of the irregular appearance as those aforementioned.

Having continued the bark some time, she gradually recovered her strength; and from that time till the date of this paper (Sept. 1803) she has not experienced the smallest degree of pain or inconvenience from her breast or rib, which had been fractured.—J. Moodie, M.D., *Med. and Phys. Journ.*, x. 414.

DISEASES DEPENDING UPON THE DEVELOPMENT OF CYSTS AND INTRA-CYSTIC GROWTHS.

The morbid condition of the breast to which we next proceed depends upon the development of closed cavities, or, as they are termed, cysts within its fascial envelope. These have received various appellations;—carcinoma mammæ hydatides, Sir Charles Bell; hydatid disease of the breast, Sir Astley Cooper; sero-cystic disease, Sir Benjamin Brodie; and unilocular or multilocular cysts, by French authors.

Various writers have offered explanations of these new growths, although none have entered very minutely into their organization.

Two classes of cysts are found in the mammary gland, each characterised by marked anatomical peculiarities.

Each class also presents fluid or solid contents, per-

fectly characteristic, and differing essentially in their nature and origin.

They may be arranged as follows:—

- I. Cysts depending upon dilatation and a morbid condition of the lactiferous ducts or acini.
- II. Cysts produced by a peculiar action in the fibro-cellular envelope of the gland tissue, and the consequence of a morbid state of the function of nutrition.

DISEASED DUCTS.

- I. *Cystoid formations depending upon dilatation and a morbid condition of the lactiferous ducts or acini.*

These may be developed—

1. Near the nipple,—*sub-areolar*.
2. In the substance of the gland,—*intra-glandular*.
3. On the posterior surface of the gland,—*sub-glandular*.

The simplest form in which these cysts exist is that in which they are commonly found upon the posterior surface of the gland.

Rarely assuming the state of an important disease, their presence indicates a certain morbid action, and they are the type, as it were, of this class. Hence I shall describe their anatomy and their contents.

The size varies from an almost imperceptible point to that of a filbert, but, I believe, is rarely larger. Their colour, which depends upon that of the contents, varies from yellow, pale red, or brown, until

it becomes almost black, or of a dirty green tint. They possess an external investment of the fibro-cellular tissue, and the lining membrane consists of a very beautiful coherent epithelium. Each epithelial cell is oval, contains a nucleus, and is somewhat granular in texture. Thus this epithelium closely resembles that of the ducts.

The contents of these cysts are of a mucous nature, of a pale yellow, reddish, or dull green tint. They exhibit a granular basis, fat globules, milk globules, and colostrum corpuscles, with epithelium. The colour probably depends upon decomposition, or the presence of hæmatin.

Thus the examination of the contents of these cysts clearly proves their origin; for, as they exhibit all the substances secreted by the gland, it is fair to presume they have the closest affinity to, if they are not identical with, some portion of the true glandular tissue.

Another means of proof is afforded which indubitably demonstrates the above position. In the breasts of middle-aged women it is not at all uncommon to find the ducts dilated and filled, as if injected with this same mucous greenish fluid, which also presents structures identical with those in the cysts.

Therefore I believe this fact is established,—that cysts may exist in the mammary gland having contents identical with those of the common milk ducts.

These small isolated cysts probably arise in consequence of obstruction in the calibre of the minute ducts, and to this cause must be attributed the

formation of larger cysts of this class, which occur either in the substance of the gland or beneath the areola.

With the assistance of diagram I. I hope to explain my view of the genesis of these cysts. At A a duct is represented, and at B an obstruction occurs. Secretion goes on into the duct, and the parietes become dilated, causing detached enlargements or a varicose condition, as along the duct 2. As the disease proceeds, the portions of the duct between the enlargements contract, and the effect, as shown along the duct 3, is the result. At last all trace of the duct becomes obliterated, and small cysts are found in condensed cellular tissue, as represented at 4.

At this advanced stage the contents of the cysts become more solid, although not always; but however numerous they may be, or whatever condition the contents may assume, yet still traces, and often very distinct, of the section of the ducts are recognizable. Thus, in a preparation in the Museum of Guy's Hospital, the thin section of a firm fibrous growth presents innumerable small cysts; the contents in some adherent, at one point, to the walls, in others detached. When magnified, a granular basis, milk globules, and a variety of epithelium, are seen. From having been a long time in spirit, the tissues are not so distinct as if they had been fresh.

Beautiful preparations of a similar disease may be seen in the Museum of the Royal College of Surgeons of England, Nos. 2744 to 2748.

I now pass to a disease of the larger ducts occurring near the nipple, and presenting a cystiform character; I say "presenting a cystiform character," because, from their anatomy and affinities, they do not clearly exhibit the essential character of a cyst—namely, a closed cavity lined by a continuous membrane. All the instances of this class of disease of which I have had the opportunity of making a minute examination, one only having been recently removed, presented every structure in common with the contents of the cysts, as before described. In addition, there existed a well-marked, firm, coherent mass, which might be removed entire after maceration in spirit, and it then presented a perfect cast of the lactiferous tube. The preparation is in Guy's Museum. A bristle is passed through the nipple into the duct, which is cut open in its vertical axis to exhibit the solid matter within. The duct is dilated, and it contained, in addition to this matter, that secretion peculiar to the ducts of this organ—namely, colostrum corpuscles, milk globules, and fat globules. The tributary ducts, which were not dilated, contained, however, ramifications from the solid mass, and gave rise to the idea that it was in fact growing from the walls of the duct, which I do not believe was the case. The tendency to morbid action in the ducts is plainly exemplified in this case by the numerous small cysts at the posterior surface of the organ, as well as in its interior. It needs scarcely to be stated that the inner surface of the duct presented its proper epithelial expansion. The solid mass was composed of

fat globules, epithelial scales of various kinds, and some spindle-shaped bodies. (Case XXIII.)

The morbid action which produces these tissues I believe to be as follows:—In the first place an excess of secretion takes place in the duct, which, from some cause or other—malformation of the nipple, or obstruction of the duct by pressure—does not flow away spontaneously, although perhaps it may be made to ooze out. The fluid becoming absorbed, the more solid material, the epithelium, remains behind, leaving a coherent mass of more or less solidity. This body may cause irritation, an excited action is induced, blastema is effused, and nucleated cells, which attain a degree of fibrillation, are formed: hence the appearance of organized growths found in the ducts.

In such a case as the one above described no doubt could exist of the nature of the contents, but in the case to be related next the whole growth presented a much more complicated arrangement. The preparation, which is in Guy's Museum, exhibits the mammary gland and nipple, with the cutis, removed at the operation. The nipple was probably malformed, being deeply inverted. After repeated trials, I was unable to pass even a bristle along the ducts or through the nipple. I therefore conclude that their apertures were imperforate. Several of the ducts are simply dilated, others are shown presenting enlargements, and within these are vascular growths. Apparently, the tumor is composed of a congeries of cysts, unconnected and isolated. But with care, and without

violence, a bristle or delicate probe may be insinuated from one cyst-like body to the other; and although the tube or duct is much convoluted, still there cannot be a doubt as to its true nature. Below and behind the gland is another cavity. Thus this specimen presents a series of enlargements, all communicating by small openings, and all presenting the same structure as lactiferous ducts. The growth in the interior consists of an immense quantity of epithelium scales, some nucleated bodies, and colostrum corpuscles. There is no trace at the present time of any definite arrangement in structure, whatever might have existed formerly; there is nothing in any way resembling the growths from true cysts—cysto-sarcoma. The solid contents of the ducts may be withdrawn from the ramifications of the principal tubes; and, in the instances in which the growth appeared to be adherent to the walls of the ducts, I discovered that it only presented this appearance where it was entering a collateral branch or smaller duct. The duct appeared to have undergone a process of convolution, as well as of distension; and thus, when a section of it was made, it resembled very closely the section of a congeries of varicose veins with their smaller branches, and contained coagula. In fact, it is a kind of varicose condition of the ducts, with partially organized contents, and the remains of that secretion which they are intended to convey. A drawing of this preparation accompanies my paper in *Guy's Hospital Reports*, October 1849, Plate II. From these facts I deduce the following conclusions, viz. :—

1. That the lactiferous ducts are liable to dilatations resembling cysts; that this morbid condition simulates more important diseases: hence, this suspicion being excited, the excision of the tumor has been resorted to.

2. There is no evidence to prove, from minute examination, that the growth within the ducts enjoys any characters in common with either the cysto-sarcomatous or carcinomatous new formations; and,

3. That this morbid condition belongs to the class of the non-contaminating diseases.

I am fully aware that, in making the above statements, I am directly at variance with the opinions expressed by Sir B. Brodie, at page 148 of his *Lectures Illustrative of Various Subjects in Pathology and Surgery*. And, with all deference to his high talents and acute observation, I must observe that the facts above stated had reference to those preparations only which I have myself examined with great minuteness, but which correspond in outward appearance, so far as I have been able to compare them, with that preparation in the Museum of St. George's Hospital upon which his observations are founded. A minute examination would determine the question.

Another observation, before concluding my remarks upon this class of cystiform affections, relates to their co-existence with almost all the forms of the other diseases to which the breast is liable. Thus the small cysts first spoken of are very commonly found in a portion of

the gland tissue removed with a tubercle of carcinoma fibrosum or medullare.

I have intentionally omitted in this description all allusion to the collections of milk, the consequence of rupture of the coats of the ducts; the details of which affection will be given hereafter.

CASE XXII.—DISEASE DEPENDING UPON A PECULIAR CONDITION OF THE DUCTS.

L. K., æt. 31, a respectable single woman, presented in the inferior region of the right mamma a flattened irregular tumor about three by two inches in diameter. The superjacent integuments were slightly adherent to it, and there was fluctuation. It had been slowly increasing in size the last six years. She had never received any injury to the part. The catamenia were always regular, and her health always good. Slight increase of pain—never, however, severe—induced her to apply to Mr. Cock. There had been a slight serous discharge from the nipple for the last five years. Mr. Cock removed the tumor, and a small portion of a lobe of the gland. The wound healed favourably, and she soon left the hospital. A drawing of the disease after dissection is given in Plate V.

Fig. 1 represents the appearance of the tumor after the removal of the surrounding fat and cellular tissue. A portion of skin is seen, and a very small part of the gland, in which at *a* a divided duct is perceptible. The entire mass is made up of cysts, which contained fluid of a dark greenish tint. One of the cysts is opened to exhibit the more solid matter within, *b*.

Figs. 2 and 3 represent the corpuscles, granular matter, and oil globules found in the fluid.

Figs. 4 and 5 are, I believe, epithelial cells.

CASE XXIII.—DISEASE OF THE DUCT; VERY PAINFUL.

G. B., æt. 34, a black-eyed, rather delicate-looking woman, single, in 1846 had a hard lump removed by Mr. Key from the axillary portion of the right mammary gland. It had been there twelve months; was painful and inconvenient. A cicatrix is visible, and, underneath, the gland is deficient; but by the borders of this hollow the gland structure may be felt indurated and knotty. The mammary glands are both small. These indurations are painful when handled or pressed, and run towards the nipple. At the time of the removal of the lump in the right breast, there likewise existed a swelling in the left, from the nipple of which a continual discharge exuded, although there never was any from the right. This breast was also very painful, and increased very slowly. It felt hard, and was situated on the axillary border. She has always menstruated regularly; had small-pox six years ago; six months afterwards, scarlet fever; and three months after that severe inflammation of chest. Neither tumors were painful at first, and they were casually discovered whilst washing herself.

There is now a hard moveable induration in the left mammary gland on its axillary border, very painful on manipulation, and which has resisted all the attempts to produce its dispersion.

Mr. Key removed the nipple and tumor, and a large portion of the gland. A growth was found in one of the ducts, and a bristle was passed along and out at the nipple. The gland was indurated, and presented several granular dilatations.

II. *Cysts containing fluid as well as solid growths.*

True cyst formations are frequently found in the mammary gland, or at least within its fascial envelope.

They appear to originate in the uniting tissue about the lobes; and I hope to be able to prove that they have a close relation with certain morbid states of nutrition, if they be not, in fact, a stage in the formation of new growths.

The healthy nutrition of every organ is carried on by a deposit from the blood of the plasma, or, as it is now more commonly termed, the blastema. This material, when first poured out, is fluid, or of a very soft-solid nature. In it the cell-development progresses, but a full detail of which would be irrelevant to the subject of this essay.

It is now, I believe, an established pathological fact, that a hypertrophied condition,—that is, an excess of the various elements in their transitional stages of development into perfect tissues, may take place; and I am inclined to think that this is nowhere better manifested than in those morbid conditions of the mammary gland which present to our notice cysts with fluid contents, cysts with solid growths, and these growths approaching more or less to the characters of the true gland tissue.

I have been led to these conclusions from observation only, and all the remarks I shall make are founded upon original researches.

Here I would digress for an instant to draw attention to the vast importance of the fibro-cellular or uniting tissue in a physiological point of view. Its anatomical relations have long been known; supporting the gland tissue by its ligamentous exten-

sions, uniting the separate lobes together into one organ by its fascia-like expansion, and entering between the lobules, and to the most minute divisions of the gland, to the very acini or terminal vesicles, it thus—that is, the parenchymatous areolar tissue—forms a kind of atmosphere to the gland in which the normal functions of nutrition are performed, but which at the same time is obnoxious to the influence of morbid actions. The healthy blastema being effused from the blood, the capillary vessels for the supply of which are so abundant and universal, into the areolar tissue immediately surrounding the true glandular, undergoes such transformations as fit the organ for the performance of its particular functions when excited by other stimuli. For, the nutrition of the tissue of the gland,—and we have now to do with the *tissues* only,—is certainly a distinct matter from the secreting function; not that they are widely separated, for they are in close relation, although they differ essentially in kind. Observation of nature clearly shows these changes. During pregnancy a growth of gland tissue takes place—active nutrition; after pregnancy and parturition, secretion of milk; after weaning, a kind of atrophy; and then, until the next pregnancy, merely a sustained nutrition.

Now it is highly probable that as we have abnormal secretion,—and there is no doubt of this fact, so we may expect to find abnormal nutrition; and if of one kind, why not of another? That is, if we find an abnormal development of true gland tissue, constituting *genuine* hypertrophy, *general* or *partial*, why may we

not find *imperfect* hypertrophy, or an arrest of development at certain stages through which we now know that all perfectly-formed tissues have progressed?

Another point to remember in the consideration of morbid actions is this : to determine clearly whether or not the morbid product be a disease *in* or *of* the tissue amongst which it is found. Want of precision in this matter has led to many errors.

I presume that all diseases depend upon the balance of healthy nutrition being interrupted either locally or generally.

1. Reference to diagram II., with its explanation, will render more clear and comprehensible what I have to state upon this subject. The horizontal section of a lobe is represented with its lobules, and developed upon the glandular tissue are cysts with fluid and solid contents; the latter in various stages of development. At D, near the duct A, is a simple cyst projecting into the fibrous envelope of the gland, and supposed to contain fluid. This cyst is formed by the effused fluid separating the fibres of the areolar tissue; and, becoming collected in excess, it forms at last a fluctuating tumor. In time the areolar tissue around the fluid becomes more and more condensed; the walls of the cyst thus become distinct, and the surrounding tissue may or may not be indurated. The epithelium lining these cysts is peculiar. It presents a very beautiful appearance; each scale is of a hexagonal figure, more or less perfect upon its sides, and contains a single central nucleus. So marked is this epithelium that I have never failed to discover its presence, even in

old and long-preserved preparations of which I could make fresh sections. It is a characteristic mark of this form of cyst, and isolates it at once from all cystoid formations which may be found in the breast. (Vide Plate III. Fig. 1, *b*.)

As regards the fluid called "serum," I have nothing new to say regarding it, except to state that I believe if an accurate chemical analysis were made of it, it would be found to differ widely from the constitution of the genuine serum of the blood and that of common serous effusions. In all probability it would be found to possess a large proportion of plastic material, at least in its early stages. At a later period, particularly when large collections form, the fluid may perhaps be common serum, and tinged with blood.

[Since writing the above, I have had an opportunity of examining the fluid obtained from these cysts, and I have found two very distinct kinds; one a limpid opalescent fluid, the other tenacious, slimy, opaque, and of various colours, although generally of a pale amber tint. The first does not contain any albumen, so far as can be detected by nitric acid or heat; the last contains so much albumen as to become almost solid by heat.]

These cysts with fluid contents occur singly, and attain an immense size, or in great numbers of very various dimensions.

They are situated in all parts of the organ; on its surface, in its interior, or behind the gland.

They are perfectly distinct from every other kind of

cyst, and must not be confounded with that cyst containing limpid fluid, and characterised by the presence of *Echinococcus hominis*, as well as that form which very rarely occurs, termed "*Hydrops saccatus mammæ*."

2. On reference to the same diagram, we see at E a cyst with fluid contents; but projecting into this is a tinted mass, M, and which is apparently, on superficial examination, growing from the walls of the cyst, but which, so far as I have examined these intra-cystic growths, are always more or less in connection with gland tissue. I have never seen a growth from the opposite side of the cyst, but they always appear to increase eccentrically as regards the gland, and never concentrically: this is an important fact in the development of these growths.

This, the mere existence of a growth within the cyst, is the first stage.

The second stage is represented at E¹, and here the growth M has increased to a large extent; the cavity of the cyst, E¹, is almost obliterated, but yet fluid still remains.

At E², a more advanced stage, the entire cavity of the cyst is obliterated, the intra-cystic growth, M, having increased so greatly as to fill it entirely. The walls of the cyst now yield, the growth increases, new cysts are formed, and the new tissue may attain an enormous size. It now enjoys a vitality of its own, fresh blastema is effused, it becomes organized, it is not under the normal controlling influence of the healthy organism,

and, without contaminating other tissues, it may be detrimental to the general health of the sufferer.

Anatomy of the intra-cystic growths.—I shall now describe the anatomy of these intra-cystic growths; and I think I shall be able to demonstrate that they present a very close resemblance to gland tissue.

Mr. Key removed a large mass of this growth, a large portion of which was in a state of degeneration and sloughing. Having opened the walls of a cyst, the intra-cystic growth was seen of a lobulated figure, and when fresh it was of a reddish colour. A portion of this growth is represented in Plate III. fig. 1. Magnified 270 diameters,—and in this the epithelium is well seen,—the hexagonal scales are observed accurately fitting to one another, and the imperfect gland tissue is also represented.

Thus we see that the intra-cystic growth is invested by a reflection of epithelium from the cyst wall.

In the same plate, fig. 2, representing a portion of a very large tumor of the breast,—indeed the whole gland was changed into one diseased mass, and weighed five pounds, probably more when recent,—the minute lobulated intra-cystic growths present very much, even to the unassisted eye, the appearance of lobuli. When magnified—figures 3, 4—these lobuli appear to be divisible into still more minute portions; and when these are magnified 270 diameters, a large body, in shape like a terminal vesicle of the gland, is seen, fig. 5. The tissue of the greater portion is of that kind termed fibro-plastic.

In plate III. figure 6, is a somewhat enlarged representation of the small lobules found in a cyst, and is sketched with the view of showing the manner in which they are always attached, either by a broad or narrow peduncle, and which is always in connection with the fibrous stroma of the mass. When one of these was detached, dissected, and magnified, and a little dilute acetic acid added to it, the figures, as delineated, were demonstrated (figures 7 and 8).

Now I think, with this amount of evidence before us, we may safely affirm the following conclusions :—

1. That certain collections of fluid take place in the areolar tissue of the mammary gland.

2. That a cyst or closed cavity is formed, and lined with tessellated or hexagonal epithelium.

3. That the physiological relations of this fluid may be regarded as differing from ordinary serum, and that it may be considered as a superabundant effusion of blastema.

4. That the intra-cystic growths, being developed within the sphere of nutrition of the mammary gland, present more or less resemblance to the gland tissue, both to the unassisted eye, as well as when examined with more minuteness.

5. That from the observations above made, these growths may be regarded as an imperfectly developed gland tissue ; and

6. That their tissue presents no resemblance to that of the carcinomata, and that there exists no evidence to

prove that it has the power of contaminating other tissues, or of being generated in any other organ belonging to the body.

Nomenclature.—To the new growths now described, the term cysto-sarcoma has been applied, and I see no good reason to change the term; remembering, however, that this merely implies the mode of growth, and not their histological affinities, which it is one of the chief objects of this essay to establish.

The term sero-cystic, applied to the first class by Sir Benjamin Brodie, is, in a practical point of view, sufficiently intelligible, and may therefore be retained; but it is only applicable to these, and not to that condition of the ducts which I have described as varicose and containing epithelial deposits mingled with the secretion of the gland.

Sero-cystic sarcoma indicates very accurately that condition of a new growth in which both the fluid effusion and solid formation simultaneously exist, and may therefore be retained.

SINGLE CYST CONTAINING FLUID.

Age.—The majority of patients who present this affection are young, although in two instances the women had arrived at the age of 52 years.

Social condition.—Some were married, and had given birth to children; others were single.

The general health.—The general health is not disturbed, and even the catamenial functions may be regular and normal.

Accidental circumstances.—A fluid sometimes escapes from the nipple when gentle pressure is made. The patient states that the tumor is the result of a blow, although this is improbable. A cyst has formed during suckling; and from the statements made concerning the contents of such cysts, they appear to differ essentially from the tumors which contain milk.

Size and situation of the tumor.—When first discovered, the tumor appears about the size of a filbert. The cyst does not attain very large dimensions, and however large it may become, its increase is generally slow. It is frequently situated near the nipple, is met with deeply embedded in the substance of the gland, at its margins or posterior to it. In one instance it apparently occupied the situation of the entire gland.

The patient's sensations.—Pain in the part affected is, in some instances, experienced at the catamenial periods, and in others a sense of coldness and tingling. Some patients experience no pain whatever in the breast, but complain of a continual darting pain down the arm. Compression excites the local sensation. In the majority of the cases no pain is experienced.

The external appearance of the breast.—The skin is of its natural tint, and in one instance only was the nipple retracted.

Manipular indications.—Of the existence of a fluid, fluctuation is the surest indication. In an early stage,

however, a hard, moveable, and apparently solid tumor is felt, but after a time the presence of fluid may be detected, which is circumscribed by a defined induration. The entire gland may, indeed, be in an indurated condition, except in the part where fluctuation is felt. The surface of the swelling is in some cases regular and globular; in others, irregular; and often the natural elasticity of the part is unchanged. A cyst of this kind, when deeply seated, is with difficulty diagnosticated; and tumors have been removed which have proved to be, upon examination, sero-cysts surrounded by indurated but otherwise healthy gland tissue.

The duration of the cyst.—This morbid formation may continue many years without giving rise to any inconvenience, and it is then its mere existence alone which is a source of anxiety and annoyance to the person so affected.

The axillary glands.—The axillary lymphatic glands do not become affected by the presence of these cysts, except under peculiar circumstances,—such as inflammation or suppuration.

The treatment.—The remedial measures which have proved successful in the cure of these cases are as follows:—Incision to allow the escape of the fluid; seton to excite inflammation in the parietes of the cyst; stimulating embrocations to induce absorption of the serous contents, or, after the fluid has been allowed to escape by means of a puncture, to prevent its being again secreted; and excision of the cyst and its contents entire.

After incision, and the escape of the fluid, means may be employed to produce *adhesion* or *suppuration* of the cyst. The former is preferable, and pressure will sometimes accomplish this object, with or without some stimulating injection. A piece of lint is sometimes introduced at the aperture after the evacuation of the fluid.

Progress.—The fluid may be reproduced after the puncture is healed; or, in the event of the incision not cicatrizing, a fungating protrusion takes place from the wall of the cyst, which gives rise to an appearance very likely to mislead those who witness it for the first time. When this occurs, the entire growth must be removed with the cyst. Great inflammation and constitutional irritation sometimes ensue upon puncturing these cysts, particularly if lint has been introduced, which must be withdrawn, and the opening in the cyst enlarged. The general health of the patient must be also attended to. Suppuration of the cyst, when it takes place, must be treated, as the case may be, upon general principles, care being taken that the pus does not accumulate.

The cyst has been seen to come away entire.

Result.—Induration often remains after the cure of these cases; but its continuance is not a matter of surprise, when we know that inflammation has been its cause, and that in an organ containing so much areolar tissue as the mammary gland.

A perfect cure may be prognosticated in these cases; and although there is no reason why another cyst may

not form in the same or in the other gland, a repetition of such a formation will never exert any deleterious effect upon the constitution, even should it recur again and again.

Morbid anatomy.—The cyst is sometimes very vascular, its walls are thin or even membranous, not thicker than the “finest cambric.” It is loosely connected with the surrounding parts, or, the surrounding tissue being condensed and indurated, the cyst may appear thick. Sometimes the tumor is not very distinctly defined. A bristle passed through the aperture of one of the ducts in the nipple occasionally enters the cyst, as observed by Sir B. Brodie; but in such a case fluid may generally be expressed from the nipple, and this indicates that the disease is dependent upon a morbid condition of the ducts, and that it is not a genuine sero-cyst.

Contents.—The contents may be clear serous fluid, limpid fluid, greenish serous fluid, dark-coloured serum, pale-coloured fluid, and a rather glutinous and albuminous fluid. In quantity it may amount to a pint, but it rarely exceeds three or four ounces.

Pathology.—See before, “On the Pathology of Cysts.”

CASES OF A SINGLE CYST WITH FLUID ONLY.

Five cases are related by Sir A. Cooper (*Illustrations of the Diseases of the Breast*, pp. 26-29).

CASE XXIV.—A single lady presented almost the whole of the left gland in an indurated condition, except, however, the

upper and anterior part, where fluctuation was distinctly felt. The mamma lay loose under the skin, and could be moved freely on the subjacent parts. It had existed four months, and was nearly stationary. The patient felt pain along the latissimus dorsi muscle, and down the arm, but none at all in the gland. The cyst was removed. The cyst contained a serous greenish fluid. The tissue of the gland was condensed, but sound. The cyst was thick. A hardened granular mass existed in the centre of the axilla. The patient was cured.—Cumin, in the *Edin. Med. and Surg. Jour.*, xxvii. 228.

CASE XXV.—A woman presented a cyst in her breast; it was punctured. It sloughed out, an indolent unhealthy ulcer succeeded, and the mamma became indurated.—Cumin, *op. cit.*

Five cases are recorded by Sir B. Brodie (*Lect. on Path. and Surg.*, pp. 143-153).

CASE XXVI.—In July 1849, my friend Mr. Curling requested me to examine some fluid which he had removed from a cyst developed in the breast of a young woman. It was not coloured, but was slightly turbid. It did not coagulate, nor become visibly changed by the application of heat. After standing some time, minute flocculent bodies precipitated; but the fluid was never clear. These bodies were composed of minute nucleated corpuscles. The diagnosis was not attended in this case with any difficulty. In October of the same year Mr. Curling informed me that there had been no second formation of the fluid, but that the patient was very soon well.

SEVERAL CYSTS CONTAINING FLUID.

These cysts may be divided into two classes; the

contents of the one class differing from the contents of the other.

In the first class the fluid is mucoid, turbid, of a greenish tint and slightly foetid odour.

In the second the fluid is glairy and tenacious, clear serum, or of a reddish tint.

The first I attribute to a morbid condition of the ducts, and I believe is characteristic of this affection.

The second are the true sero-cysts.

Age.—The patients who present tumors depending upon cysts have usually attained the middle period of life.

Social condition.—They may be married or single, prolific or sterile.

The general health.—Their health is generally good, and their capability of suckling their offspring unimpaired; one woman having suckled six children with both breasts indiscriminately.

When first developéd.—The tumors have been first noticed immediately after parturition; the cysts soon ulcerated, discharged their contents, and healed. In one instance the patient was suckling her sixth child when she discovered the tumors. Pus and blood had been previously discharged from the nipple of the affected breast.

Growth.—The increase in the size of the cysts is sometimes rapid from the first; in other cases it is slow at first, but after a time their enlargement proceeds rapidly.

To what attributed by the patient.—The surgeon is

informed by the patient that a blow at some period or other, prior to the appearance of the swelling, is the cause of the disease. In most cases, however, there is no accident recollected to which to attribute the growth.

The condition of the breast.—The disease may affect the entire gland, or cysts may be situated under the areola on the surface of the gland, in the interior, or on the posterior surface, and confined to one of its lobes only.

Weight.—The affected gland has been known to weigh as much as seven pounds.

The patient's sensations.—The degree of suffering of which patients complain is very uncertain. Some experience no pain whatever, or it is transitory, never severe; others, although at first unconscious, from their sensations, of the existence of the tumors, after a time feel a sensation of stinging, or crawling, and slight uneasiness. Lancinating pains have been complained of. To the touch the breast may be painful, but it is usually only tender, and pressure may even be permitted without annoyance.

The external appearance of the breast.—The skin remains unchanged until inflammation or suppuration of a cyst takes place. It may be slightly elevated or irregular, from the position of the subjacent cysts.

Manipular indications.—Manipulation detects several tumors, varying greatly in their dimensions, extremely resisting, moveable, and firm. Fluctuation may be distinguished in some, not in others, and the whole gland may be also indurated.

The duration of the cysts.—The disease may continue as long as ten years, with only slight inconvenience.

The axillary glands.—Slight enlargement of the axillary glands may take place; and in one instance a gland was removed at the same time as the breast, but it was quite healthy. The lymphatic glands are most commonly not affected.

The treatment.—The application of leeches and pressure have proved useless; and I believe that excision or amputation of the breast, according to the extent of the disease, is the only certain means of cure.

Progress.—Cicatrization usually proceeds favourably; nor is there any fear of this process being arrested by a return of the disease; for neither relapse nor contamination are characteristic features of this complaint.

Morbid anatomy.—1. The gland tissue in some part of the organ is indurated around a cyst which contains a turbid, greenish, and slightly foetid fluid. There also exist minute and small cysts, isolated or aggregated together, in other parts of the gland containing opaque yellow or greenish fluid. When carefully examined, some of the cysts may be found to communicate.

2. One or two cysts are seen of a larger size than the others, with a highly vascular membrane, and containing serous glairy fluid. Other smaller cysts are scattered throughout the gland with clear serum. The cysts are surrounded by indurated fibrous tissue, and may occur in clusters or isolated from each other. The fluid contents may be tinged by the colouring matter of the blood.

The two kinds are often met with contemporaneously in the same morbid specimen.

Pathology.—See before, “On the Pathology of Cysts.”

CASES OF SEVERAL CYSTS WITH FLUID ONLY.

Sir A. Cooper relates several cases of disease depending upon the development of cysts; but he makes no distinction between those formed within the fibrous envelope of the organ—the true cysts, and those which appear to originate in a morbid condition of the ducts.—*Illustrations, &c.*, pp. 30-37.

CASE XXVII.—A firm tumor was developed in the substance of the gland towards its axillary border. Lancinating pains were felt in the mammary gland. The tumor was removed with the breast. The latter was unusually firm around a cyst the size of a walnut. Small cysts existed in other parts of the gland *not bigger than peas*. The fluid they contained was turbid, greenish, and slightly fœtid.—Cumin, in *Edin. Med. and Surg. Jour.*, xxvii. 228.

REMARKS.—This I have little doubt was a disease of the lactiferous ducts, of precisely the same nature as the one before related, and of which a drawing is given. This disease differs essentially from that morbid condition of local nutrition in which the true cystic developments originate.

One or two of the diseases represented by Sir A. Cooper also belong to the same class, especially that which forms the subject of the first illustration, the preparation of which is now in the Museum of St. Thomas's Hospital.

CASE XXVIII.—A single lady, enjoying good health, complained of her breast, which was, in comparison with the sound

one, hardened and enlarged. The entire gland appeared to be affected. The skin was of its natural tint, and not involved by adhesions with the diseased organ. After a month, the swelling increased considerably in one part. It was painless, but slight uneasiness was experienced. The whole gland was removed.

Dissection of the diseased breast.—The tumor was more firm than the normal gland. Posteriorly was seen the soft tumor, the size of a nutmeg, and filled with reddish fluid. Other small cysts containing a yellow, transparent, or opaque fluid were detected, and minute transparent bodies were scattered through the gland.—Warren *On Tumors*, p. 207.

REMARKS.—This is a form of disease which I believe to be erroneously classed with the sero-cystic. It is by no means uncommon to find these transparent bodies at the posterior surface of atrophied glands.

CASE XXIX.—A girl, æt. 24, of pale countenance but good nutrition, presented a soft, fluctuating, painless tumor in the left breast as large as an egg. It increased slowly. The cutaneous veins were distinct. The gland appeared to be well-developed. The tumor was extirpated, and the result was most favourable. The disease was composed of cysts varying from that of a pea to that of a walnut. The walls of the cysts were fibrous, and the contents were sanguineous coagula and lardaceous matter.—Schuh, *Oesterr. med. Jahrb.* lv. 321.

SINGLE CYST WITH FLUID AND A SOLID GROWTH.

Age.—Two cases have occurred in patients above forty-five years of age.

The size and situation of the tumor.—These tumors

vary in size from one to four inches in diameter, but in one case the affected was twice the size of the normal breast. The tumor may be upon the surface, imbedded in the breast, or situated behind it.

The patient's sensations.—The patient describes a tenderness or a pain which is sharp and aching. The weight is sometimes inconvenient. In other instances the disease is painless.

The external appearance of the breast.—The skin is of the natural tint for some time; but in the advanced stage it becomes livid over the swelling, ulcerates, and forms a large open sore with an elevated centre and slightly everted and thin edge, and it discharges an offensive and bloody matter. The shape of the tumor may be spheroidal.

Manipular indications.—The tumor is defined, with or without an indurated base which becomes adherent to the subjacent tissues, and fluctuation may be detected. The skin over it is moveable, and the tumor presents fluctuation in one place and is firm in another. The elevations in the centre of the ulcer are not adherent to the skin.

The duration of the cyst.—The cyst may continue unchanged for a long time.

The axillary glands.—The lymphatic glands in the axilla are unaffected, even in some cases in which the integuments are ulcerated.

The treatment.—The removal of a part, or of the entire gland, is demanded.

The progress.—A similar disease may return after

two years, the sufferer being pregnant in the interval. But this disease never contaminates the tissues around, and is perfectly harmless.

Result.—The result of excision is favourable.

Morbid anatomy.—The cyst is membranous, and its cavity is occupied by solid and fluid contents; the fluid is clear or tinged with blood, the solid growth occupies more or less of the cavity, and is attached by its base to that surface of the cyst which is in contact with gland tissue; it has an irregular surface, “looks like fibrine become vascular” (Brodie), is like fibrinous deposit with coagula, or is a lobulated growth, soft, translucent, and like jelly. The gland is sometimes atrophied.

Pathology.—See before, “On the Pathology of Cysts.”

CASES OF SINGLE CYST WITH FLUID AND A SOLID GROWTH.

CASE XXX.—A tumor the size of a walnut was removed. It was formed by a membranous cyst, the fourth part of the cavity of which was occupied by an irregularly shaped excrescence *attached to one portion of the internal surface.*—Brodie, *Lect. on Path. and Surg.*, 141.

CASE XXXI.—A tumor, the size of a walnut, was imbedded in the breast. The whole mammary gland was removed. The cyst contained serum, and its cavity was occupied by an excrescence *growing from one portion of its inner surface.* The excrescence looked like fibrine become vascular.—Brodie, *op. cit.* 141.

CASE XXXII.—A patient, æt. 48, presented a tumor in one of her breasts. The affected organ had increased to twice

its normal volume in six months. The patient was more incommoded by the weight of the breast than by pain. The tumor was spherical, and the skin moveable over it. Fluctuation was perceptible in one part, but it was firm in others. The tumor had existed one year. The constitution of the woman was good, and the catamenia were regular, although less abundant than in former years. Amputation was performed. Upon dissection, a cyst was found filled with viscid matter, forming threads between the fingers like synovia. The inferior part of the cyst was areolar; in other parts it was lobulated. Some of these lobes were soft, translucent, and tremulous, like jelly; others were dense, as if fibrous. The mammary gland was atrophied, and attached to one side of the tumor.—Cruveilhier, *Anat. Path.* liv. xxvi. p. 1.

CYSTS CONTAINING SOLID GROWTHS, SOME WITH FLUID,
OTHERS WITHOUT.

Age.—These tumors of the female breast generally present themselves before the age of thirty-five; nevertheless, instances are related which have occurred above this age, but none after that when the catamenia usually cease.

Social condition.—Of eighteen cases which I have collected, the social condition of the women is not stated in ten of them; of the others, six were married, two were single. This result differs from the generally entertained opinion—namely, that single women are more obnoxious to these formations than the married. Some of the married women were prolific, others sterile. All these cystic diseases occur more frequently in the upper classes; for with sixteen years'

hospital experience I have seen but very few cases in the wards.

The general health.—The general health is unaffected, and even some women presenting these pathogeneses have been remarkable for their healthy and robust appearance.

Accidental circumstances.—In one case the disease commenced during the sixth month of pregnancy, and the woman was pregnant twice more after its commencement. Another sufferer suckled four children with the affected breast. Two patients were never able to suckle, one from the diminutive size of the breasts; and in this case the disease commenced three months after delivery, a viscous fluid having previously oozed from one nipple. Sanguineous fluid sometimes also escapes from the nipple when the breast is affected with these growths.

To what attributed by patient.—The patient often attributes the origin of these developments to a contusion, or to local pressure; and these may be exciting causes.

Situation and size of the tumor.—Like the simple cysts with fluid, these will be found to occupy certain localities in regard to the normal gland: namely, upon its surface—*sub-areolar*; within its substance—*intra-glandular*; and posterior to it—*sub-glandular*; displacing, therefore, the organ in a variety of directions. If allowed to remain some years, they attain an enormous size; and even by those of a few months' growth considerable dimensions are presented.

The patient's sensations.—The development of these growths is usually attended with pain, and it is only when their weight becomes excessive that the sensation is distressing. In certain cases lancinating pains have been experienced at the catamenial periods. Manipulation, and even pressure, is not complained of; and in one instance only was pain caused by moving the tumor.

External appearances.—The skin over the breast and tumor is generally unchanged in colour, except it be adherent, or until within a short time before it ulcerates. The superficial veins are turgid with blood, or varicose. In one case the skin was dark coloured. When the integuments, after becoming thinned, have ulcerated, projecting fungus-like growths shoot forth; and the hole in the skin appears as if a piece had been punched out. The margin of the aperture constricts the growth, which projects in a convex, foliated, bleeding, or sloughing mass. The discharge may be sanious, or of a more healthy character, and solid portions come away with the dressings. In very large tumors several projecting nodules of this sort are met with, varying from half an inch to three or four inches in diameter. The eye often detects an irregular nodulated appearance beneath the skin.

Development.—The increase of these tumors is slow and gradual. They may, however, increase rapidly at times, or after they have existed for a certain period.

Manipular indications.—At an early period, and when small, these growths are globular, hard, firm, and

resisting; but after a time they become softer, and at last fluctuation may be detected, or they communicate to the finger a sense of elasticity, as if the contained matter were not fluid, but a soft solid, like that communicated by a mass of carcinoma medullare. It frequently happens that the greater part of the mass feels solid; in other parts it is soft and fluctuating. Several small globular tumors are often detected, some fluctuating, some soft, others hard. At first the skin is not adherent to the new growth, which is moveable upon the subjacent tissues. After a time, however, adhesions to the adjacent parts take place. After the fluid has been evacuated, the solid growth from the walls of the cyst may sometimes be discovered.

Their duration.—Patients have submitted to the existence and slow growth of these tumors as long as fourteen and nineteen years, and without much inconvenience.

The axillary glands.—The lymphatic glands of the axilla are, in almost all instances, unaffected; but with ulceration of the skin, which supervenes upon an advanced stage of the disease, enlargement and tumefaction may occur. These morbid changes are, however, perfectly harmless.

The treatment.—If the cysts be few, and the contents in great part fluid, an incision or puncture made into one of them may afford relief, by allowing the escape of the fluid, and consequently a diminution in the size of the tumor. Pressure, well applied, may also give temporary relief by exciting absorption of the fluid or

rupture of some of the cysts, and hence a decrease in the dimensions of the growth : but no permanent benefit is the result. The introduction of a seton is not attended with advantage. A ligature has been used to produce a separation of one of these morbid growths ; but although in the case to which allusion is made, its use was attended with success, the adoption of this plan cannot be recommended.

In the majority of cases, amputation of the breast, or of the morbid growth alone, if practicable, is the only means by which the patient can be relieved from the fears excited by the existence of the tumor.

Progress.—Recovery from the operation generally proceeds favourably. In one case a pregnant woman was the subject of operation, and no bad result followed, not even miscarriage.

Result.—Complete cure is generally the satisfactory conclusion of such operations, and recurrence of the disease, at a distant period, is a most rare circumstance. Even this is a matter of slight importance, as its removal will not be followed, in all probability, by another development.

The *constitution* is never contaminated by these growths.

Morbid anatomy.—The anatomy of the new developments of this class presents an almost inexhaustible variety, at least in appearance. Cysts of every variety of size, blended with fibrous growths varying in the same way, cysts containing fluid only, cysts with fluid and intra-cystic growths, vascular and pendulous, very

soft and gelatinous, in other instances of the most fibrous and solid nature, present themselves in different parts of one and the same tumor. Mingled also with growths, which, if occurring alone, would be designated "chronic tumor," they seem designed to lead to a correct appreciation of their histological affinities; for we find in the same preparation every stage of development, from blastema to imperfectly developed gland tissue, and thence to an almost perfect form of the same. They increase to the weight of twelve pounds, and when of this magnitude the appearance of the section of the mass gives rise to considerable perplexity. It is almost impossible for the eye to be too well prepared for the appreciation of the varieties presented by these growths of imperfectly developed gland tissue. When large, it often happens that a great portion of the interior of the mass is necrotic; extravasations of blood have taken place, small and large collections of synovia-like or gelatinous fluid of every tint and hue, yellow, red, brown, green, or even black, are met with, but very imperfectly enclosed by any cyst-like structure. In this state, then, recognition becomes a matter of considerable difficulty. But in the midst of all this apparently indistinguishable medley, many parts of more or less solidity are present; and these, when minutely examined, infallibly lead to the detection of the structure and the relation of the whole. Atrophy of the mammary gland often occurs concomitantly with these growths.

The minute anatomy of the tissues forming these intra-cystic growths being fully described in the

section "On the Pathology of Cysts" (page 78, et seq.), any further detail is here unnecessary.

I may be permitted to state, however, that I have examined as closely as possible the preparations of these diseases in the Museums of the Royal College of Surgeons, of the Hospitals of Guy, St. George, St. Bartholomew, St. Thomas, and the London, and that the details of the morbid anatomy might have been extended, as regards variety, to an almost indefinite length, but that I felt compelled to notice only the more marked characters of the class.

Often supplied with large vessels.—A very large vessel, or even two or three large arteries, may frequently be felt supplying the new growth. They may be searched for in the normal situation of the branches which usually supply the gland, and in fact they appear to be one or more of these vessels very much enlarged. Thus the branches coming through the pectoralis major muscle above, from the thoracic artery, I have seen so large as to bleed profusely. The long mammary branch from the axillary artery is similarly affected. Before amputation, therefore, the arterial supply to the tumor should be carefully examined. Large veins may sometimes be dissected running through the larger growths.

CASES OF CYSTS CONTAINING SOLID GROWTHS, SOME WITH FLUID, AND
OTHERS WITHOUT.

CASE XXXIII.—K., æt. 58, married, general health good,

exhibited an enormous tumor of the left breast: it was thirty-five inches in circumference. A lump the size of a marble was discovered at the age of forty-four. It was hard, gave no pain, and slowly increased for twelve years. For two years after this the tumor increased rapidly, at times suddenly, but without pain. Its weight became distressing. The larger portion of the tumor felt solid, other parts soft and fluctuating. The solid was at the upper, the fluid at the lower region of the breast. When removed, the tumor consisted of cysts containing fluid, and with vascular pendulous masses attached to their walls. The operation was successful.—Sir A. Cooper, p. 44.

CASE XXXIV.—M'D., æt. 24, married, enjoys good general health. Is in the sixth month of utero-gestation, and has given birth to three children since the discovery of the tumor in the left breast. At the age of nineteen, a small tumor formed in the centre of the left mamma. Lancinating pains were experienced, worst at the catamenial periods. Manipulation does not give pain, and the tumor is moveable upon the subjacent parts. The superjacent skin is of its normal tint, and it is not adherent to the mass beneath it. The superficial veins are congested. The growth feels as if composed of several small tumors; it is hard, somewhat irregular on the surface, and is about equal in size to the head of a child. The removal of the tumor was effected in the sixth month of utero-gestation with complete success, and *without* causing premature parturition. Some enlarged axillary lymphatic glands were also excised. A cavity filled with serous fluid, into which numerous small tumors projected, was seen on dissection, as well as vesicles with amber-coloured fluid, surrounded by scirrhous-like substance. The fibrous tissue was of a firm, cartilaginous texture, with membranous bands like scirrhous. The mass weighed fifty-seven ounces and a half. Perfect recovery was the result.—Cumin, *Edin. Med. and Surg. Journ.* xxvii. 229.

Interesting cases are related by Sir B. Brodie, in one of which, after puncturing the cyst, a solid tumor was felt, and which, after some time, projected through the skin. Another in which, after removal of the first tumor, which had existed several years, a similar disease was developed eight years afterwards, and was extirpated with perfect success. And a third, the tumor in which instance weighed seven pounds. This was amputated with the best result, the patient being alive and well several years afterwards.—*Lect. on Path. and Surg.* p. 141-7.

CASE XXXV.—A woman in the enjoyment of good health exhibited a very large and painless tumor occupying the whole breast. The skin was of its normal hue; the entire mass pendulous. The disease had not existed twelve months, and, when first discovered accidentally, it was of the size of an egg. It felt like a collection of lobulated bodies, and had an irregular knotted appearance. Some of the nodules were soft, elastic, fluctuating, and tender on pressure. The whole was amputated; and, although considerable bleeding followed, no ligatures were required. The part amputated weighed between twelve and thirteen pounds, and was composed of globular hydatids, and a connecting medium of coagulable lymph. Some cysts contained glairy fluid. The axillary glands were not affected. The recovery was perfect.—*Warren On Tumors*, p. 205-6.

CASE XXXVI.—Æt. 51, a florid healthy-looking woman, the mother of ten children, four of whom she had suckled with the affected breast, showed to Mr. H. J. Johnson a large tumor of the mamma. It measured thirteen and a half inches in the vertical, and eleven inches in the transverse diameter. It was only painful when handled. It commenced at the age of thirty-two, and had been nineteen years attaining the above-stated dimensions. The surface was irregular, and in one point ulceration of the skin had taken place a short time before re-

moval, through which a mass presenting a granular surface protruded. The whole felt firm, except above the nipple, where fluctuation was perceptible. It was adherent to the integuments, but moveable upon the thoracic parietes. The amputated mass weighed seven pounds. Its origin was ascribed to pressure. The axillary glands were unaffected.

Dissection of the tumor.—A section of the breast exhibits a large tumor formed of a collection of cysts, most of which are filled by lobulated growths. Some contained a more uniform solid substance, some fluid. Some of the intra-cystic growths protruded through their cyst at that part of the tumor where they had caused ulceration of the integuments. The surrounding integuments are healthy.

The cure was complete, and there had been no return after the lapse of two years.—*Descriptive Catalogue of the Path. Spec. in the Museum of the Royal College of Surgeons of England*, I. 77, No. 175.

CASE XXXVII.—Æt. 30, had a large elongated tumor of the right breast, twenty-two inches in its greatest circumference. The surface was irregularly nodulated, hard in some parts, soft and fluctuating in others. At the age of twenty, a painless enlargement of the right breast commenced, and the increase has been very slow. The amputated mass weighed eight pounds and a half.

Dissection of the tumor.—It consisted of *five* tissues, of very different aspects, connected together by condensed cellular tissue: 1st, of a homogeneous, whitish, hard mass, with cells filled with clusters of small bodies, some white, others red; 2nd, of two substances, one firm and reticular, the other made up of small globules; 3d, of a tissue which formed the basis, and was vascular, and broke down under pressure; 4th, of white, firm, almost cartilaginous tissue; and 5th, of greenish yellow, tremulous material, resembling jelly.

The patient was cured, and afterwards enjoyed perfectly good health.—Chelius, *Heidellb. Klin. Annalen*, iv. 499, 517; and West's Trans. of Müller, *On the Nature, &c. of Cancer*, p. 177.

And another case occurring at the age of twenty-four years.—*Op. cit.* p. 180.

CASE XXXVIII.—A woman presented a large spheroidal tumor in the breast, equal to the size of the head of an infant six months old. It was lobulated, encysted, and moveable. The superjacent skin was thinned, and it presented a circular ulcer, as if made with a punch. Eighteen months since the breast was quite normal, and the progress of the growth has been very rapid the last six. Amputation was performed.

Dissection of the tumor.—The cyst was adherent to the skin; it was fibrous, and lined by a serous membrane, reflected on to the lobules of the tumor. The section was lobulated, some lobules having a cavity in their centre. The lobules could be turned out in some cases. The tissue was whitish, like the salivary gland. It contained no cancerous juice, but synovia-like fluid.—Cruveilhier, *Anat. Path.* Liv. xxvi. p. 2.

CASE XXXIX.—A young, married, and prolific woman had a painless tumor in the breast. The gland was prominent, and the surface uneven, with large and small elastic and fluctuating eminences. External to the great mass were small nodules, the skin over which was bluish. The mass when moved was painful. Sanguineous fluid once escaped from the nipple. The axillary glands were unaffected. Amputation was performed.

Dissection.—A large cavity was seen in the centre, with semi-globular masses covered with smooth membrane, and filled partly with fluid, and partly with coagulated blood. In one

place was a mass like medullary fungus. In another were small isolated cavities with lard-like matter.

The patient was cured, and the result has been favourable.—Schub, *Oesterr. Med. Jahrb.* lv. 321.

CASE XL.—A robust woman, æt 30, the mother of two children, which she never suckled, presented a tumor the size of the adult human head in one of the breasts. It had been growing one year, and commenced as a small tubercle deeply seated at the nipple. Fluctuation was detected. The veins became varicose. It was not adherent to the pectoral muscle. A seton was inserted, but was useless. The skin now ulcerated, and fungous sprouts shot out. A ligature was applied around the base of the tumor, and gradually tightened. This plan was adopted, fearing the hæmorrhage after amputation.

In ten weeks the mass separated, and the wound healed completely.—Tisher, *Gaz. Méd. de Paris*, 1835, p. 729; quoted also by *Nélaton*, p. 85.

CASE XLI.—Æt. 50, married, and mother of two children, who never has had any serious illness, and has been regular from the age of sixteen years, presents a tumor in one of the mammæ, not in the centre of the gland, but rather to its right side, and about equal in size to two fists. She discovered a small tumor in the breast between five and six years since, which has increased rapidly the last two years. The tumor is moveable beneath the skin, and, although the patient presents considerable "embonpoint," projects in a very marked manner, and feels heavier than its size would indicate. At first it was painless, but lately it has been painful. The skin covering the tumor is bluish, and presents rather dilated veins, but no trace of inflammation. Amputation was performed by M. Blandin, December 30, 1843. The tumor, after the removal of the fat, weighed two pounds. A cyst was situated at the posterior boundary of the

tumor, which contained blackish viscid liquid. The posterior part of the tumor, which projected into, without penetrating the cyst, was lobulated and composed of rounded cones. The fibrous membrane which enveloped the tumor, well marked at its inferior part, continued on to the lateral walls, and then became cellular membrane, not dense, but not the less distinct. The tumor offered an irregular surface; the projections being of a yellowish-white colour, and presenting the aspect of a cauliflower. The interior of the tumor exhibited a yellowish-white substance, vascular in places, and easily lacerated by pressure with the fingers. At the superior part of the tumor the mammary gland was seen, and the tumor appeared to be developed behind the breast. The patient at first went on well, but died of inflammation of the chest. At the necropsy not a trace of degeneration was discovered in any of the organs. Examination with the microscope revealed fibrous elements, fibroplastic liquid, nuclei, and nucleated globules, as well as fusiform bodies.—Lebert, *Phys. Path.* t. ii. p. 198.

CASE XLII.—A married lady, æt. 45, consulted the late Mr. Key on account of a very large tumor of the right mamma. She had given birth to several children, but had never been able to suckle with the affected breast. Milk was never secreted by it. With the left she had suckled. Her general health was good. At the age of 38-39 the disease commenced. Slow in progress until the last six months, during which time it had increased rapidly, the growth now involved the entire breast-gland. Six months since ulceration commenced. A projecting mass was noticeable in the centre of the ulcer, and the surface of this was beginning to slough. To the touch the mass felt soft, rather pulpy, and in places fluctuation was detected. The surface was irregular; the skin normal in colour. The axillary glands were healthy. The nipple was very distinct, but small. Mr. Key removed the mass in January 1849: it weighed two pounds

and a half. It consisted of an oval piece of integuments, the remains of the mammary gland, and a new development. At one extremity of the cutaneous surface was seen the nipple, at the other an ulcer. This ulcer was nearly circular, about an inch and three quarters in diameter. The larger portion of the border of the ulcer formed by the skin was inverted, of natural tint, and of its usual thickness. At one point the edge was thickened, everted, of a bluish aspect, and very hard. The mass projecting in the centre was unattached to the edges of the ulcer, and was divisible into small lobules, attached by peduncles to the tissues behind. Small islets of skin crossed the ulcer, as if the skin had given way in more points than one. One mass of these sprouting intra-cystic growths had begun to slough upon its exposed surface, but very superficially. From the nipple the lactiferous ducts were traced into the remains of the mammary gland, and they were more or less distended with white milky fluid. Ramifications of ducts could be traced over the tumor, with here and there dilatations forming little round and white bodies.

A vast number of cysts composed the mass, together with the remains of gland tissue.

1. Small cysts containing fluid only.
2. Small cysts containing cholesterine.
3. Large cysts with fluid and growths from the walls.
4. Small and firm fibrous masses in capsules.

The small cysts (1) with fluid only were not very numerous. The fluid was dark-coloured, contained those bodies called, by some authors, the compound exudation corpuscles made up of minute particles of (apparently) fat, and laminæ of cholesterine. This fluid coagulated by heat into a soft solid.

The cysts (2) presented no peculiarity; they appeared to be formed of dilated tubes, and they were rare.

The mass was chiefly composed of the large cysts (3), from which, in some instances, clear yellow, in others turbid greenish-

coloured fluid flowed away when they were incised. It was tenacious, and coagulated by heat. Blood discs and fatty corpuscles, simple as well as compound, abounded.

The intra-cystic growths were so plentiful and various in appearance that it is difficult to describe them.

1. Bodies of a brilliant yellow, amber-coloured, very translucent.

2. Some of a brilliant-red blood colour, this fluid being extravasated into their tissue.

3. Others very pale, of quite a hyaline substance.

4. Some opaque and yellowish-white.

5. Very large bodies, generally of a pyriform shape, perhaps half an inch long; a few one inch. Many very minute bodies, but all firmly attached by peduncles.

6. Small masses, very soft, like jelly.

The walls of the cysts were very thin, so attenuated as to permit in several the intra-cystic growths to be seen within.

The intra-cystic growths had here and there filled the cavity, and become adherent to the walls of the cysts; and these resembled small "chronic tumors," being very firm and fibrous. When cut, a blastematous fluid, clear, bright, yellow, and tenacious, exuded.

Plate III., figs. 1, 2, and 3, represent some of the minute dissections, for which the reader is referred to the Plate.

DISEASES DEPENDING UPON HYPERNUTRITION.

HYPERTROPHY OF THE MAMMÆ.

General considerations.—The condition of any organ increased in size by an unusual growth of its normal tissues constitutes the disease termed *hypertrophy*; but since an organ may be enlarged by the growth of a new

tissue, and one foreign to its normal condition or normal constitution, hypertrophy is divided into *true* and *false*.

True hypertrophy is that state of any organ in which one or more of the tissues of which it is normally composed are developed in an extraordinary degree; for example, in the organ of which we are writing the glandular and the fibro-cellular tissues may, either generally or partially, become so much developed in one breast as to cause it to exceed the size of the other, which maintains its normal dimensions, by double or triple its volume.

False hypertrophy, on the contrary, expresses that state of an organ which being apparently increased in size is not so in reality, but depends upon the growth of some tissue foreign, as it were, to its healthy constitution; for example, as when the mamma is greatly increased by growths of fat, fibrous tumors (?), cysto-sarcomata, &c.

Physiological remarks on the mammary gland.—The mammary gland differs from every other organ in the body. Called into requisition upon extraordinary occasions only, held by close ties of relationship with the generative functions,—now active, now quiescent, and again in a short time in full activity,—its physiological affinities with the economy must influence the morbid developments arising therein.

Changes in the condition of these glands.—I shall now describe, in a few words, the changes taking place in these glands at certain periods.

Increase of volume is one of the first changes which occurs, and this is simultaneous with the development of the ovaries and their appendages. Having reached a certain size, in consequence of the gland tissue attaining a particular stage of development, the activity of nutrition ceases until a new excitement is induced of a higher kind than occurs at each catamenial period. The ovaries now become stimulated by sexual intercourse; impregnation and conception take place; the mammary glands are now again in an active state; a growth of new tissue takes place, and their development is completed to enable them to perform their functions. Increased activity pervades the gland at the birth of the child, and the secretion of milk is the result. The gland is now an active organ; has reached, in fact, its climax of perfection; its teleological purpose is accomplished. After some months of activity its functions are arrested, and it now again resumes its inactive condition; it retires within itself, as it were, becomes small, in some women resuming the virgin size, and so remaining until again called into activity. All these changes are repeated during the next pregnancy: gland tissue is developed, that which remained becomes more perfect, and the secretion arrives at its proper time. Thus this organ is always in relation with the ovaries and uterus, sympathising with them in their healthy and morbid actions, and affected by many other causes which must more or less interrupt the healthy performance of their function.

Considering these physiological facts, can we be sur-

prised at the variety and nature of the morbid growths arising in the breasts? Can we not find a ready explanation of the hypertrophy which attends their development at puberty? Can we not explain the true hypertrophy which occurs at later periods of life? Can we not in some measure account for those small growths formed of imperfect gland tissue? or for the imperfectly developed glandular tissue, cysto-sarcoma? And are not the neuralgic pains, mazodynia, explicable when these facts are remembered?

If it be not admitted that a new growth of gland tissue takes place, more or less, at each pregnancy, to what is to be attributed the great increase in the size of the breasts which occurs between the fourth and ninth months? I have formed my opinion upon the matter from observation, and have not the slightest doubt upon the subject. (See Appendix.)

HYPERTROPHY COMMENCING AT PUBERTY.

Age.—About the age of puberty, or a short time afterwards, one or both mammary glands may increase slowly, and attain an enormous size.

Social condition.—Of the nine cases I have collected, not one of the girls was married.

General health.—The general health of some of them was not much impaired, but in others it was quite the reverse.

The catamenia were established in all, but in many of the cases the secretion was either vitiated, scanty, or

irregular as to the time of its appearance. One patient is stated to have been quite regular. In two the establishment of the menstrual function was precocious, being so early as the eleventh year.

One or both breasts affected.—Both the breasts are generally affected, although usually one more than the other, and when only one, the right was that diseased. The two breasts are not always at first simultaneously affected, but one before the other.

Accidental circumstances.—In one case the breasts had been large from infancy.

Progress.—The growth is generally slow, but it may for a time advance rather rapidly, and then cease. It is not attributed to injury.

Size.—The breasts may attain an enormous size, measuring twenty-six inches in circumference, or weighing twenty pounds after death.

Patient's sensations.—The patient does not complain of pain in the breast, but the inconvenience from their size and weight is very great. In some instances manipulation gives no pain; but in others, on the contrary, the slightest touch of the skin is insupportable. There is frequently a sense of fulness and tension at the catamenial period.

External appearance.—The appearance of the breasts is usually that of mere magnitude, sometimes pendulous, like a pear in shape, and the skin natural, or in one place of a bluish tint. The veins may or may not appear congested.

Manipular indications.—Manipulation does not in-

duce one to expect any morbid growth, no tumor is felt, but the breast feels uniformly soft, without tension, but heavy. It sometimes feels as if every lobe was enlarged. Fluctuation was nevertheless detected in some cases.

Duration.—The disease may continue several years, and beyond the inconvenience in some cases no mischief results. In others, however, the patients appear to have been worn out, and they died in consequence of the wasting of the system generally.

Axillary glands.—The axillary glands are not diseased.

Treatment.—The treatment should be directed to the general health, and to the restoration of a healthy tone in those functions which may be deranged. This will include the exhibition of aperients, alteratives, emmenagogues, tonics, and the like. Amputation has been in some cases resorted to. Dr. Fingerhuth was successful in the cure of two cases by exciting lactation; and this proceeding appears to me to be based upon sound physiological views. Mr. Thomson introduced a seton, and was successful in reducing the size of the organ. In one case the swelling was punctured, and a few ounces of serum escaped. This was attended with only temporary relief.

Morbid anatomy.—When the breast is affected in this manner, all that appears upon examination is a great increase of the tissues which compose the organ. The true secreting portion is merely greatly increased in quantity; there appears to be no morbid change in

its structure. The uniting tissue is also abundant ; but this presents its usual appearance. The lobes of the gland may be more than usually distinct, and somewhat loosely connected together. The occurrence of a cyst, must be regarded as accidental.

Pathology.—This disease arises at that age when the mammary organs begin to be developed, and seems to depend upon a loss of that restraining influence, exerted by the economy, which controls the development of every tissue or organ, and retains them within their proper bounds. The excess of excitement, giving rise to hypernutrition, may likewise be upheld by the irregular functions performed by the ovarian and uterine organs : hence the necessity of directing our remedial measures so as to restore their secretions. As it is well known that the gland becomes quiescent after having performed its highest function, the secretion of milk, there is some reason for supposing that if this once occur, its normal state might be resumed ; and practice has proved this view to be correct.

CASES OF HYPERTROPHY COMMENCING AT PUBERTY.

CASE XLIII.—Miss ———, æt. 15. The catamenia were established, but they were irregular as to time, and scanty in quantity. Her general health was good. She presented considerable enlargement of both mammary glands ; the *left* $23\frac{1}{2}$ inches, the *right* 22 inches in circumference. Both breasts were affected. The *left* began to increase three years since ; subsequently the *right*. No tumor was perceptible in the breasts, and the skin felt natural. She did not suffer any pain. The

skin appeared natural, and the axillary glands were unaffected. She took emmenagogues, laxatives, steel and aloes, with mercurial alteratives. Local support was employed.—Sir Astley Cooper, p. 69.

CASE XLIV.—M. B., æt. 14. The catamenia were established at twelve years and a half. She was not unhealthy. She presented very great enlargement of the mammæ. Her breasts were larger than natural from infancy. Both breasts were affected; the *left* the largest. She only suffered from the sensation of weight. The catamenia ceased suddenly from cold. Her spine became curved in consequence of the weight of the breasts. She was of a delicate habit. Attempts were made to bring about a return of the catamenia, which failed. The left breast was removed. The weight of the breast removed was 11 pounds, 4 ounces. It presented a healthy tissue, merely simple enlargement. The wound cicatrized; menstruation returned regularly; the right breast diminished in size. At 23 years of age she was quite healthy; the right breast was larger than normal, and felt as if composed of a number of glands connected together.—Hey; *Pract. Obs. in Surg.*, p. 500.

In reply to an inquiry, Mr. Hey obligingly sent me the following note:—

“Leeds, January 23rd, 1849.

“SIR,—I am sorry to say, that I believe the breast to which you refer has not been preserved, or I should have had great pleasure in submitting it to your inspection.

“I am, sir, your obedient servant,

“WILLIAM HEY.”

CASE XLV.—E. H., æt. 16. Catamenia established at eleven years of age, and regular ever since. The breasts were enlarged. The *right* was three times larger than the *left* breast. The

disease had existed more than one year. The *left* breast was flabby; the *right* very painful, particularly when handled. Her health was impaired. The axillary glands were tumid. Iodine, leeches, opiates, mercurials, iron, tincture of cantharides, turpentine, and issues, were tried, without benefit. A seton was passed down to the gland itself. In three weeks the patient was quite well.—Thomson; *Lond. Med. Gaz.*, xxiii. 237.

Plate XI., fig. 2, is a drawing from a bust in the museum of Guy's Hospital of a girl æt. 16.

CASE XLVI.—HYPERTROPHY OF THE MAMMÆ.

Charlotte Russel, a coloured girl, had from early life been an inmate of the Philadelphia Almshouse. Of her early history nothing worth commemorating is related prior to the age of puberty. At this critical period, when nature institutes a new series of actions in the system, and all the vital forces are augmented, the customary changes are represented to have taken place. Her left breast, however, was observed disproportionately to enlarge, and at the time of her removal, four months after she had completed her fourteenth year, had attained a formidable size. Its unusual magnitude attracted the notice and became a ground of objection on the part of the gentleman in whose service she was about to engage. It was urged, however, by the physician of the house, that this mammoth production would dwindle to its ordinary size as she advanced in years, and the rest of the body became more matured. With this "quietus" from the medical staff, she was admitted as a domestic into the family of Mr. Henry Miller. But, as if all the energies of her system had been concentrated in the mammæ, their unnatural development continued to be steadily progressive until about six months since, when, from some inexplicable cause, both breasts seem to have received a

new resistless impulse, and rapidly to have enlarged to their present enormous dimensions. To obviate the inconvenience of such a ponderous mass, a laced jacket was constantly worn, but the incumbrance did not in any degree disable her from the performance of her ordinary domestic duties. Her activity was even remarkable; she could with the greatest facility climb a tree or engage in the sportive gambols of youth. Her general health appears to have suffered but little derangement from her peculiar formation; we have no evidence, however, that she menstruated more than once, and then it is represented to have been scanty in quantity. Be this as it may, on Friday, April 14th, she was admitted as a patient into one of the wards of the Philadelphia Almshouse. At the time of her admission she had just completed her sixteenth year. On examining the mammaræ a large superficial slough was discovered, occupying the most depending part of the left breast, the result of a recent contusion. She appeared to be suffering excruciating pain. Her tongue was furred; her bowels constipated; the surface of the mammaræ hot; and the pulse evinced considerable febrile irritation. To relieve these indications the appropriate remedies were employed.

Tuesday, 18th.—The patient still complained of intense suffering. The whole surface of the mammaræ now exhibited a disposition to sphacelate. Hectic fever became established; at times she was delirious, and her strength was fast ebbing away. Under such circumstances no treatment could be instituted with any prospect of radical relief. All that could be done was to temporize as long as possible, to sustain her declining strength, and mitigate her sufferings by the exhibition of narcotics. In this hopeless state she continued to languish till the 22d, when she expired.

Autopsy.—Externally the mammaræ presented the appearance of two large oviform masses, rising above the clavicle, and extending below the umbilicus. No traces of the nipples could be

detected, having been completely imbedded by the enormous distension of the parietes of the mammæ.

Measurements of each breast, and weight :—

The right,—greatest circumference . .	34 inches.
„ lesser „ . .	18 „
„ weight	12 lbs.
The left,—greatest circumference . .	42 inches.
„ lesser „ . .	26 „
„ weight	20 lbs.

On removing the right breast and exposing its interior, instead of a mass of disease or an accumulation of fluid (as a superficial examination might have induced the belief), it proved to be a mere hypertrophy of the organ, unconnected with structural disease. The adipose and cellular tissues, as well as the whole glandular apparatus, were enormously enlarged, but no appearance of disease or exudation of fluid was perceptible. In short, a healthy structure was found, whose only anomaly was its mammoth proportions.

On examining the organs of generation, the ovaria were found to be larger than natural, and apparently diseased. The uterus did not exceed the ordinary size of females at her age, but two-thirds of its inner surface was coated with a dense covering of coagulable lymph. The muscular system was moderately developed. The inferior extremities, from the constant effort necessary to sustain so great a burden, exhibited considerable muscular firmness. The upper extremities, however, were somewhat emaciated and relaxed in fibre. In stature she was about five feet—the medium size, perhaps, of girls at her age.—S. C. Huston, *American Journal of the Medical Sciences*, No. xxviii. Aug. 1834, p. 374.

TRUE HYPERTROPHY IN THE ADULT.

Age.—The cases which I have collected are those of *young* women, and I believe this disease usually occurs before the age of thirty years. It is met with, however, in females of more advanced age.

Social condition.—The single as well as the married are liable to this increase of the gland,—the prolific as well as the sterile woman. The breast of one patient who never suckled her children became thus affected (Case XXII.)

General health.—Some women were delicate, others healthy; and their catamenia normal.

Accidental circumstances.—One female was pregnant with the seventh child when the disease commenced. In another the increase took place after marriage, the breasts having been larger than ordinary before.

Situation and size.—The whole organ is uniformly and generally enlarged. The breast may increase to such dimensions as to compel the sufferer to support the weight of the mass upon her knees.

Patient's sensations.—Complaints are rarely made of pain, for, if there be any, it is very slight; but the inconvenience of supporting so great a weight becomes an intolerable annoyance.

The external appearance.—The breast resembles the shape of a pear: the aspect of the skin is normal. The nipple may present its usual appearance, or be

flattened, and the areola is often expanded. The affected breast appears double the size of the healthy one.

Manipular indications.—The impression conveyed by the sense of touch is just as if every lobe of the breast were increased in size. The surface is irregular. Manipulation never detects any circumscribed induration.

One or both breasts.—Very often both breasts are affected, perhaps not simultaneously, for it is not uncommon for one to be affected before the other. One only may, although rarely, be thus attacked.

Duration.—This condition may continue for a very long time without any serious result.

Treatment.—The continued growth of the gland tissue does not appear to be by any means controllable. In that case in which the breast increased rapidly during pregnancy, and became double the size of the other, the lady suckled the child, and the breast afterwards resumed its normal dimensions. If it be quite certain that the increase depends upon the development of perfect gland tissue, the induction of the secretion of milk may be attempted, and probably with beneficial result. If, however, the newly formed tissue be imperfect, amputation remains as the only resource.

Result.—As regards the return of the disease, there need be no fear on this account.

Morbid anatomy.—The tissue of the hypertrophied breasts should resemble, as closely as possible, that of the true gland tissue, being, in fact, nothing more than

an excessive growth of the normal structure. It appears from the observation of Gluge, that the acini may be in an hypertrophied condition,—that is, they may exceed the measurements of those of the healthy gland, and that there may be an admixture of cystosarcoma. The weight of one breast, when removed, was twelve pounds, and it seemed to consist of normal gland tissue.

CASES OF TRUE HYPERTROPHY IN THE ADULT.

CASE XLVII.—L., æt. 17, single, of light complexion, of a delicate constitution, and whose bowels were habitually constipated, had enlargement of the left mamma. It measured twenty inches from its junction with the chest above to its lower part. It was twenty-three inches in circumference. It felt as if every lobe of the gland were increased to several times its usual magnitude. The nipple was flattened, and the areola expanded.—Sir A. Cooper; *Lectures, by Tyrrell*, ii. 218.

Sir A. Cooper mentions, also, the case of a healthy-looking woman, æt. 23, with enlarged breasts. She was rather disposed to corpulency; the catamenia were irregular, pale, and scanty.—*Illustrations, &c.*, p. 69.

CASE XLVIII.—L. W., æt. 23, of delicate and emaciated constitution, showed to Dr. Fingerhuth a very enlarged breast. It had gradually increased for the last several years to the circumference of twenty-six inches. She suffered no pain in the part. A sensation of fluctuation was perceptible in one point, and, at the lower part, there was a bluish spot. She refused to submit to the removal of the breast, and a puncture was made where fluctuation was felt. Three to four ounces of yellowish serum were discharged. Subsequent compression was insup-

portable, and, refusing all medical aid, she died exhausted in about five months.

Dissection.—The usual phenomena of hypertrophy were apparent after death.

Remarks.—I suspect that this was not a case of true hypertrophy, as supposed by Dr. Fingerhuth, but to have been one of those instances in which imperfectly-developed gland tissue becomes generated to an enormous and uncontrollable extent.—Fingerhuth; *Brit. and For. Med. Review*, iv. 226; and in *Zeitschrift. f. d. Gesammte Med.*, 1837.

CASE XLIX.—E. B., æt. 17, of a healthy constitution, applied to Dr. Fingerhuth on account of an enlargement of the right breast. For the last twelve months this increase had been gradual, although for the last two months more rapid than previously. The right was double the size of the left breast. To the touch it was uniformly soft, not tense, and pressure was endurable. A sense of fulness and pressure had been always experienced about the catamenial periods. The areola was large and dark, and the nipple normal.

Treatment.—She was salivated, and took burnt sponge and ioduret of mercury; leeches and spirit lotions were used, but no benefit accrued. With the view of exciting the secretion of the gland, a dry cupping-glass was applied over the nipple, and after persevering in this practice for sixteen days, milk was secreted. She had an iodine bath every fifth day. Vegetable diet was enforced. She took pedestrian exercise in the open air, and a suspensory bandage was applied with advantage. The size of the breast diminished, and, with the exception of a sudden increase which once took place during a menstrual period, the mamma resumed its ordinary volume.—Fingerhuth, *op. cit.*

CASE L.—M. K., æt. 16, of sound constitution, but of a nervous, irritable, and constipated habit, observed a painless enlargement of the right breast. It had been slowly increasing

for eighteen months, and was twice as large as the left—the healthy breast. The catamenia were irregular, and at such times great fulness and tension of the glands occurred. Leeches, compresses, ointments, purgatives, quackery—including homœopathy, were tried without benefit. Aperients, iodine-baths, vegetable diet, gentle exercise, and measures to produce the lacteal secretion, were recommended; after persevering in which eleven weeks, the breast was reduced to very nearly the normal dimensions.—Fingerhuth, *op. cit.*

CASE LI.—A single, country girl, æt. 18½ years, applied to Mr. Adams on account of the large size of the mammary glands. Her general health was good, although she occasionally suffered from hysterical attacks. The catamenia, although scanty, were regular, and had been so since her sixteenth year. Shortly after the establishment of puberty, and between the sixteenth and seventeenth years, the breasts increased in size. They are now (February 1849) very large and pendulous,—at one time larger than at another. They are flaccid and knotty, but uniformly so, the gland tissue feeling firm when pressed. She suffers no pain, except on pressure, and at the catamenial periods. The gigantic proportions, their tremulous movement as if containing fluid, and the normal colour, are the most striking features. The nipple is somewhat developed; the areola large. She has a fresh colour in her cheeks, and she looks healthy. Various remedies were tried, and persevered in, but the glands were very little diminished when she left the hospital.

CASE LII.—A married lady, who had been resident in India, was pregnant with her sixth or seventh child, and returned to England on account of the enlargement of her right breast. There was no circumscribed induration perceptible; she did not suffer any pain, and the affected breast was twice the size of its normal state. She had never suckled her children. Sir A. Cooper advised her to suckle the forthcoming infant. She

remained in England, followed the above advice, and the enlargement gradually subsided. Dr. Ramsbotham was so kind as to give me the details of this case.

TUMORS COMPOSED OF IMPERFECTLY-DEVELOPED
GLAND TISSUE.

LOBULAR IMPERFECT HYPERTROPHY.

Synonymes.—Pancreatic sarcoma, Abernethy : chronic mammary tumor, A. Cooper.

This term I apply to a *new growth* of more or less perfectly formed gland tissue, developed upon a lobe of the breast.

The word adenocèle (ἀδὴν, a glandule; κηλη, a tumor) might, perhaps, be applied to these tumors, since this term would at once express the structure of the abnormal growth. As, however, these tumors resemble, more or less closely, the structure of the gland tissue, the term used at the head of the chapter may be more generally applicable.

First described, with accuracy, by Sir A. Cooper, and compared by him to the gland tissue in its external appearances; when examined by the unassisted eye only, these tumors are now demonstrated, by the aid of the microscope, to be composed of tissues, if not identical in all, certainly in many particulars, with those composing the lobules of the gland.

As regards the perfection of the structure, many varieties are presented. From a condition of a very

rudimentary kind, as I shall demonstrate presently, every gradation is met with, until almost a perfectly normal structure is attained. Intimately attached to the normal lobe, the new growth partakes, more or less, of its organization, and, although apparently isolated, it remains within the sphere of the nutrition of the normal gland.

Age.—These new formations occur most frequently in *young* women,—that is, before the age of thirty years; and although there have been instances met with in persons of forty, yet the growth commenced some time before that age.

Social condition.—Both married and single women are obnoxious to this variety of hypertrophy, but it most commonly exists in the unmarried. Prolific as well as sterile women are subject to it.

General health.—The general health is undisturbed, but the catamenia are in some cases irregular.

Accidental circumstances.—In one case a tumor of this kind had been removed when a second formed. In another the patient had never been able to suckle with the breast which presented this abnormal growth.

How discovered.—Patients generally state that the lump was discovered accidentally, or that their attention was directed to the organ by some slight malaise, but by nothing of greater severity than this.

To what attributed.—The sufferer often traces the lump to a contusion received at some distant or indefinite period; and I myself believe that these growths may take their origin from such accidental causes.

Situation and size.—The attention of the surgeon is drawn to a firm body upon the surface of one of the lobes of the gland, which is very superficial, and easily moved under the skin, although distinctly attached to the gland by a kind of peduncle. It may be either near the nipple or towards the peripheral extremity of the lobe, and even quite at its termination, as if distinct from the lobe; but it is invariably connected with gland tissue, and always within the fascia of the mamma. The size extends from half an inch to two or three inches in diameter, which, however, the new growth may exceed, but it then approaches the class, "Hypertrophy of the gland depending upon the development of a new growth." I do not deny the existence of lobular imperfect hypertrophy in any part of the gland.

Patient's sensations.—Pain is not always an accompaniment to these tumors; yet generally more or less is experienced at the catamenial periods. A sense of weight and fulness, dull and aching pains locally, or of a darting lancinating character, and extending in various directions, have been complained of. Pressure, even delicate manipulation, will excite pain, which is persistent for some time afterwards. However, in proportion as the pain attending these growths increases, they approach the "painful tumor of the mamma,"—a *variety* which is only separated from this group by its excessive sensitiveness to external, and especially mental impressions, for in structure they are identical.

External appearances.—It is not until the tumor has attained some size that any trace of its existence is observable. The whole gland may be rather larger than the other, or the integuments may be irregularly elevated and nodulated.

Manipular indications.—These growths communicate to the touch a variety of sensations; generally of the same resisting texture as the gland itself, they may become of extreme, even of stony hardness. They are nodulated, lobulated, irregular or smooth, and generally very moveable. The attachment to the lobe of the gland may, with care, be discovered in almost all cases, but they often feel as if isolated and unattached, rolling beneath the finger in a manner which renders it difficult, especially if they be painful and the person fat, to fix them between the fingers in order to examine them.

Right or left gland.—Both glands, at the same time, are sometimes the seat of these growths; even in one breast three may exist, and in the other, one only.

Duration.—The length of time which these tumors exist, without producing any evil in the constitution, is one of their important features. They increase very slowly, and in one instance a tumor had been growing fifteen years without attaining a large size.

Treatment.—Alteratives, with or without local depletion, and general attention to the health, will sometimes arrest the growth of these formations, and even render any operative interference unnecessary. Also,

when the proper function of the gland has been brought into play, these tumors have been known to disappear; and, supposing one should exist during pregnancy, or before marriage, there is no reason to fear that the integrity of the breast would be in any degree impaired. Removal of the new growth is frequently demanded to allay the anxieties and fears of the patient; but, when recourse must be had to this measure, the surgeon has the satisfaction of knowing that he is removing an abnormal tissue, of the return of which there is no fear.

The axillary glands.—The lymphatic glands seated in or about the axilla have been noticed to undergo enlargement, but it is not probable that this depended upon any influence exerted by the presence of the growth.

Progress.—So far as the operation is concerned the progress of these cases is in almost every instance satisfactory. The wound made is usually very trifling, and cicatrization quickly follows.

Result.—No operation is attended with more gratifying results to the patient or the surgeon, than the excision of these growths. A tumor in the breast conveys to the mind of every woman the most frightful forebodings. Cancer, with all its attendant horrors, appears destined to be her future lot, and often she resigns herself to her imaginary fears. It is the part of the surgeon, however, to allay all these groundless alarms of the patient, and to inspire hopes for the future. Tumors composed as these are always

harmless; their existence may be a matter of annoyance, but need never cause much anxiety. Their removal is always attended with success; and even after this operation which is but trifling, the patient, when occasion requires, is perfectly able to suckle with the affected breast.

Morbid anatomy.—The structure of the true lobular imperfect hypertrophy approaches very closely to that of the tissue of the lobe upon which it is developed. It is itself lobulated, divisible into the most minute lobules, attached by a prolongation to the breast, and invested by a fibro-cellular envelope or capsule continuous with the proper fascia of the gland. As described by Sir B. Brodie, it may be mingled with adipose tissue, like the breast itself. It presents to the naked eye a granular appearance, is quite white, rosy, or red; but the depth of the redness, depending upon the quantity of retained blood, varies according to the length of time the section may have been exposed to the influence of the oxygen of the air. A section of such a tumor, when first made, is of a bluish white; after a time it becomes rosy, and in a longer time is quite red. The lobules are connected by the common areolar tissue. These growths may attain the weight of one pound and a half.

After an attentive and minute investigation of the new growths belonging to this class, I am compelled at once to acknowledge the impossibility of describing, by words, the numberless varieties presented by them. I candidly acknowledge that, so far as examination

with the unassisted eye extends, I have never seen two fresh specimens which were so completely alike, in every respect, as to enable one to say, "This is the *true* lobular imperfect hypertrophy." On this account I have assigned this general term to the whole class, for I hope to be able to demonstrate that, from an almost perfect new gland tissue, we descend, step by step, to one of a very imperfect kind ; and, as we have a morbid action giving rise to a perfect and imperfect hypertrophy of the mammary gland or of a large portion of it, so we may find the same repeated on a very small scale.

1. In Plate II. figs. 7, 8, and 9, the anatomy of a male mammary gland is demonstrated. Of course this organ, although large, must be regarded as in a very rudimentary condition ; indeed, it is not difficult to demonstrate similar tissues beneath almost all male mammillæ. I regard this instance, then, as a hypertrophied condition of a rudimentary organ. The whole mass was composed of areolar tissue, as a stroma and uniting medium, and the gland tissue, or acini, composed of the secreting terminal cells. These, the important points, are represented by the figs. 8 and 9.

Now, I have seen a tumor resembling this removed from the mamma of a young woman. Thus, we find a growth identical in structure with a male rudimentary gland developed upon, and in contact with, a lobe of a normal female breast. The rudimentary acini, and their tissues, were exactly alike ; the areolar tissue was precisely the same in both instances, and to the

naked eye a section of the one could not be distinguished from that of the other. Plate IV. fig. 1.

This, then, is one variety of lobular imperfect hypertrophy.

2. Referring to Plate VII. fig. 1, a section of a new growth is there represented inclosed in a fibrous capsule, but presenting a very different aspect. The surface presents minute elevations; it is granular, somewhat lobulated, and of a pale greyish, pink, or yellowish tint. Minute examination demonstrated the existence of innumerable terminal cells, united together by well-organized areolar tissue, but presenting no ducts. These cells, rendered more distinct by diluted acetic acid, contained epithelium. The size of these cells far exceeded that of those met with in the normal tissue. (See explanation of the Plate.)

Plate VIII. represents the minute anatomy of a similar growth; and here the terminal cells are seen under magnifying powers of different degrees. The general disposition of the cells is found in fig. 2, and the epithelium at fig. 4. Of the structure, then, of morbid growths like these, there cannot be the slightest doubt. They approach more closely the true gland tissue.

This constitutes another variety.

3. From this stage of development these morbid growths present a more or less retrograde condition, and by the most gradual steps they descend, until they mingle with, and can no longer be distinguished from, the cysto-sarcomata.

May I be allowed to add, that their lowest condition is that of a cyst containing fluid? I almost fear to do this at the present moment, and yet I believe that there will be evidence of the most incontrovertible kind to demonstrate this position.

Opportunities have not occurred in sufficient numbers to enable me to trace the development of these growths, step by step; but the facts which I am about to state are not without their importance.

In *Guy's Hospital Reports*, 2d Series, vol. vi. p. 340, Pl. III., is a sketch made from a preparation preserved in spirit. The healthy lobe of the gland was removed with a new growth, which had been developed upon it, and this was termed "Chronic tumor." Upon minute examination it turns out to be a very small cystosarcoma; the tissue of which it is composed is represented as well as that of the normal gland tissue.

I have also examined a tumor removed as a "fibrous" or "chronic tumor," for it could not be decidedly stated to which class it belonged after it was removed. From this a thin, viscous, glairy, and synovia-like fluid could be expressed, having characters resembling those of the fluid in the sero-cysts. Minute examination showed that this growth was unequally composed of tolerably well formed gland tissue, imperfectly formed gland tissue, well developed fibro-cellular tissue, and imperfectly developed fibro-cellular tissue, and all inclosed in a fibrous capsule, having the normal tissue of the breast firmly adherent to it.

Now, it appears to me that this tumor demonstrates

the various stages through which these morbid growths pass. Here is found the fluid blastema, the imperfectly developed glandular and fibro-cellular tissues, and that form which is more perfect. But, as I have stated above, further researches must be made by other observers, as the opportunities offered to a single individual are not sufficiently numerous.

These, however, form another variety of lobular imperfect hypertrophy.

CASES OF LOBULAR IMPERFECT HYPERTROPHY.

CASE LIII.—A woman, æt. 37, married, but sterile, who had always enjoyed good health, and in whom the catamenia were regular from her twelfth year, observed, in her thirty-fifth year, a tumor in the *left* breast, the size of a hazel-nut. It could be distinctly felt beneath the skin, but could not be entirely circumscribed with the fingers at its lower border. It was painless at first, but afterwards she experienced darting pains in it. Her general health was very good. The tumor was excised. It was enclosed in a fibro-cellular envelope, and consisted of two lobes. The primary lobes consisted of a number of smaller lobes, and these of secondary lobules, which, to the unassisted eye, appeared like delicate granulations. The tumor did not contain many blood-vessels, although vascular loops might be traced into the secondary lobules. The colour of the tissue was yellowish-red, and its general appearance resembled the structure of a raspberry. The smallest lobules, slightly magnified, measured between one-seventh and one-quarter of a millimeter in breadth, and rather more in length. A higher power exhibited in the interior of these lobules a radiating appearance. Cells were also distinctly seen from one-

thousandth to one-seventieth of a millimeter, with nuclei of one 1-140th of a millim. but many more nuclei than perfect cells. —Lebert, *Phys. Path.* t. ii. p. 193; and *Abhandlungen aus dem Gebiete d. Prakt. Chirurgie*, S. 280.

CASE LIV.—Æt. 28, presented a tumor of the breast which had existed three years. It was not adherent to the nipple, nor was there any tendency to ulceration. The diseased part was of a yellowish-red tint and of a lobulated structure, the lobes being from four to five millimeters in length. Microscopic examination revealed the same tissues as those described in the last case. The mammary gland itself was vascular.—Lebert, *Phys. Path.* t. ii. p. 194.

CASE LV.—“CHRONIC TUMOR” WITH “CYSTO-SARCOMA.”

A married woman, æt. 30, mother of two or three children, the youngest seven years old, consulted Mr. Clark concerning a small tumor in the left breast. Five years before, she discovered a small lump in the part, the size of a large pea, and it remained of the same dimensions for four years, but the last twelve months it has grown quickly. A firm circumscribed tumor is felt rather deeply seated in the breast. She suffered no pain, merely a little tenderness. Her health was very good, and she bore the aspect of health. She had been under medical treatment several months without deriving any benefit, and therefore Mr. Clark removed the growth.

The tumor presented many points of interest, the chief being the association of a solid fibrous growth with a more delicate foliated tissue in a kind of cyst; in fact, in this instance the “chronic mammary” was associated in the same fibrous envelope with a portion of the “cysto-sarcomatous” development. In all parts the caecal terminations of the gland tissue were distinctly seen. See Plate IV. Fig. 3, which represents the growth

divided by a vertical incision. *a*, indicates that portion of a firm, solid, and fibrous structure, the "chronic tumor;" *b*, the foliated, almost granular part; and *c*, one of the cysts. *D*, represents one of the masses of the caecal terminations of the imperfectly developed gland tissue forming the tissue *b*. The whole was enclosed in a fibrous envelope, around which was fat, and a little of the normal gland tissue.

CASE LVI.—TUMOR IN THE FEMALE BREAST IDENTICAL IN STRUCTURE WITH THE LARGE MAMMA OF A MALE.

A young unmarried woman had suffered for many months considerable pain in a tumor situated above the mamma. Her health was very good. The tumor was very solid and resisting. After the trial of various remedies, in the hope of dispersing the growth, it was removed by the late Mr. Key. When divided it was of a firm, fibrous, compact, and uniform character. It resembled as closely as possible a portion of condensed mammary gland tissue. Immediately after the section being made, it was quite white, but it became a little pink on exposure to the air. It is represented in Plate IV. Fig. 1. *a*, are the figures of the caecal terminations of the gland tissue filled with epithelium; and *b*, the epithelial cells highly magnified. The great interest belonging to this tumor was derived from the close similarity it presented to the tissues of an enlarged mammary gland in the human male subject. See Plate II. Figs. 7, 8, and 9.

Filaments of nerves were easily traced into this tumor.

CASE LVII.—In November, 1847, Mr. Curling gave me a small tumor, which had been removed from the mamma of a young woman. To the unassisted eye it had a firm, fibrous, white, and gland-like appearance. At Plate II. Fig. 6, a portion of this tumor is represented magnified 90 diameters; the caecal terminations of the gland tissue are seen of large dimen-

sions, varying however, in size, and distended with epithelium. The letter *a* points to the tunica propria, *b* to the epithelium. This figure should be compared with Fig. 6, A, Plate I., and it should be also observed that this is magnified 270 diameters. An idea may thus be formed of the large size of the caecal terminations in the new growths.

CASE LVIII.—TUMOR OF A CYSTIC CHARACTER COMPOSED OF PEDUNCULATED MASSES.

Mr. Francis Toulmin sent me the tumor represented at Plate VI., with the following history.

A domestic servant, æt. 26, single, and in the enjoyment of pretty good health, in May, 1848, discovered a tumor in the left breast. The catamenia were regular. The tumor felt firm and lobulated: it was slowly increasing, shooting and lancinating pains were felt, and the integuments were slightly adherent to the tumor. On Dec. 28th, 1848, Mr. Toulmin excised the tumor. The wound soon healed. The new growth was enveloped in a firm fibrous envelope. When cut it appeared as if it would all fall to pieces, particularly in the centre, so small and delicate were the foliated growths. Here and there were small fissures rather than cysts, and the whole was succulent and easily torn.

When these foliated bodies were placed under the microscope, their free borders presented a very irregular outline (fig. 2), and when more highly magnified, the caecal terminations of imperfectly developed gland tissue were seen filled with epithelium (fig. 3).

CASE LIX.—HARD TUMOR IN THE RIGHT BREAST.

A. B., æt. 32, the mother of five children, four of whom she suckled with the affected breast, presented in Feb. 1849 a hard tumor in the right breast. Her health has been always good,

although she says she is delicate: the catamenia are perfectly regular. She looks delicate, has a fresh colour, is small in stature, and she does not look as if well nourished.

Eighteen months since she was induced by painful sensations to examine her right breast, and then, for the first time, discovered a small hard lump in the gland. It has increased very little since she first noticed it. A hard, very moveable tumor, about one inch long, and half an inch broad, is perceptible above and near the nipple: its surface is irregular. It was at first painless, but latterly it has become very painful. The integuments of the part are quite natural, not being even raised.

The tumor was excised by Mr. Cock on the 20th February, and the wound soon healed.

Examination of the tumor (Plate VII.)—The new growth was enveloped by a delicate fibro-cellular tissue, was lobulated upon its surface, the divisions between the lobes extending into the interior. When first cut, its surface was quite white, but after exposure to the air it became yellow, and lastly, almost red. It was very firm and resisting, and not very vascular.

With the assistance of the microscope there was no difficulty in demonstrating the cæcal terminations of the ducts, or the true secreting portion of the gland tissue. (Figs. 2, 3, 4.)

These cæcal terminations were filled with epithelium. Their limitary or "basement" membrane was very distinct and delicate, and when torn the contained epithelium often escaped in a mass, which, however, retained a marked and peculiar outline (fig. 5). The epithelium consisted of simple nucleated globules, clear and transparent as water. Some very large nucleated bodies were noticed, with dark nuclei (fig. 6).

This gland tissue was connected by the common uniting, or fibro-cellular tissue, which presented the ordinary delicate wavy outline.

The terminal cæci greatly exceeded in dimensions those of the healthy gland tissue, and there was not a trace of ducts.

They were generally grouped together in twos or threes, very rarely more were seen in contact, and they presented abrupt terminations at their narrow ends.

CASE LX.—TUMOR IN THE RIGHT BREAST.

A. B., æt. 40, a single woman, applied to Mr. Adams, Dec. 1848, on account of a tumor in the right breast. She had always enjoyed good health. For twelve months she had been sensible of the existence of a tumor, which was very hard, irregular on its surface, and raised the skin. She had experienced slight pain. Various means having been tried to resolve the swelling, but without success, the tumor was excised. The wound soon healed.

Examination of the tumor.—The tumor, of an oval figure, was enclosed in an envelope of condensed cellular tissue, with fat, and some of the natural gland tissue. It was very dense, compact, and irregular upon its surface, being nodulated, and but slightly attached to its investing fibrous envelope. One or two blood-vessels were traceable into it. A section of the growth presented a rather smooth, dense, and somewhat lobulated structure, with here and there small fissures, as if deficient, at these points, of uniting tissue. Its tint became very deep after exposure to the air.

Microscopic examination.—The new growth was entirely composed of gland tissue and the common uniting fibro-cellular tissue. In this tumor, however, large masses of the caecal terminations of the ducts were seen, which greatly exceeded the dimensions of those of the normal tissue. They were very clearly defined by the limitary membrane, and were filled with an epithelium of an oval figure, which more clearly resembled that of the normal gland tissue. Each epithelial cell contained a nucleus—some two. No ducts were seen. Very little fluid existed in this tumor.

See Plate VIII. Fig. 1, represents the tumor and its envelope ; 2 and 3, the caecal terminations of the imperfectly developed gland tissue ; and 4, the epithelium.—Compare Sir A. Cooper's delineations of the "chronic mammary tumor."

THE PAINFUL TUMOR OF THE BREAST.

These new growths belong to a sub-class, for their tissue does not differ from that of the last described.

Of the painful affections of the mammary gland three distinct kinds must be recognised, since, in a practical point of view, an accurate diagnosis is a matter of great importance.

1. *Mazodynia*, or a painful affection of the organ generally, to the consideration of which a separate chapter will be devoted.

2. Lobular chronic induration of the normal tissue.

3. Lobular imperfect hypertrophy ; a new growth.

Both these, 2 and 3, being attended with intense pain, either paroxysmal, continued, or in consequence of and after manipulation.

The varieties 2 and 3 we shall describe together, as the contrast between them will be the more striking, and the practical utility of the distinction will be more apparent.

Age.—The painful tumor is most commonly met with in early life ; and, towards middle age, the chronic lobular induration.

Social condition.—Single women generally present the former,—married women the latter ; and of these,

either the sterile or prolific may be the victims, although I believe the first class is most subject to it. This induration, however, may often be traced to some irregularity or morbid affection occurring during lactation, such as a sudden arrest of the secretion of milk, and other circumstances.

General health.—Women of delicate constitutions, nervous, excitable, and irritable, are the greatest sufferers from these complaints. They appear in some measure, also, to be connected with abnormal states of the uterine secretions, for it is not uncommon to find that the catamenia are either altogether suppressed, or, if not irregular at the time, vitiated in quality, or deficient and variable in quantity. At these periods, also, the patients suffer an unusual degree of pain in the back and loins. Great derangement of the intestinal secretions is another concomitant evil, and one of no trivial importance.

Accidental circumstances.—It appears that the induration subsequent upon mammary abscess, if it does not disperse, may become the seat of these severe pains. Thus, in some women of a particular temperament, we may be prepared for this result after milk abscess. Again, when one breast has to perform double duty during lactation, the other being damaged by abscess or malformed nipple, it appears that, after weaning, painful induration may ensue in the sound breast.

Situation and size.—1. The lobular chronic induration occupies the same position as one of the lobes of the gland. One or more lobes, or a portion of one,

may be thus affected. It exceeds but very little, if at all, the normal size of the lobe.

2. But the true painful tumor is a newly developed tissue superadded to the lobe. Growing in connection with the gland tissue, it is generally seated upon the surface, or at the peripheral termination of one of the lobes. It may attain the size of about two inches in diameter, or even more, but it generally comes under the observation of the surgeon long before acquiring these dimensions.

Manipular indications.—The *induration* is usually of an elongated figure, hard, and lobulated. It blends with the surrounding gland tissue. It is moveable with the whole of the gland, and not upon it. It appears to form a portion of the gland, but, because it is so much harder than the surrounding parts, it is said to be a tumor. This is a certain morbid condition of the normal tissue of a lobe.

Superficial, and rolling under the touch beneath and unattached to the skin, the *painful tumor* escapes the fingers, and the pain is often so intense that manipulation is impracticable.

Patient's sufferings.—The pain experienced by women labouring under these morbid conditions is often of the most agonizing description. So greatly do they dread the least touch that it is not possible even to apply the finger to the part, and even the thought of manipulation causes an increase of the pain. It may be of a continued, transitory, or paroxysmal nature,—of a dull, aching or acute, lancinating kind.

It is not confined to the hardness only, but extends in the course of certain nerves, varying according to the situation of the induration or tumor. It generally extends in the direction of the ramifications of the same nerve upon the filaments of which the induration is seated, and with which the nerves are connected. For example, when upon the sternal border of the gland, and the filaments of the anterior intercostal nerves are irritated, the branches from the intercostal nerves—the intercosto-humeral filaments, sympathize, and pain is felt down the arm. There is frequently extreme pain on pressure over the points of exit of the cutaneous filaments of the intercostal nerves. At the catamenial periods the pains are often greatly increased. Mental emotions and sexual impulses likewise excite paroxysms of pain.

External appearances.—The whole breast sometimes appears swollen, and the integuments over the seat of pain are slightly deepened in colour, being of a rosy tint. About the period of the return of the catamenia, also, the skin may become red, and there is a sense of fulness or tension.

Right or left.—It is rare for both breasts to become affected simultaneously. However, I have seen a tumor of this kind in corresponding situations in the two breasts; namely, at the upper or clavicular borders of each gland.

Duration.—The induration may continue some time, and a tumor may be three years before it reaches a size equal to one inch in diameter.

Treatment.—The treatment of these diseases depends upon an accurate diagnosis of the real nature of their tissue.

1. If it consists of indurated normal tissue, either general or local therapeutical means may be used, and much benefit anticipated. Even should the induration feel like a decided growth or tumor, excision must not be recommended until all other means fail to reduce it to the normal condition. The means to be employed are—1. General: alteratives; mercury and iodine: tonics; cinchona and gentian and iron; purgatives or aperients: alkalies, &c. 2. Local: three or four leeches once or twice in the week; an application of ceratum saponis with extract of opium or belladonna, mercurial or iodine ointments, lotion of acetate of ammonia, and compression with stripes of emplastrum amm. cum hyd. if they can be borne, or an ointment of mercury and opium spread upon lint and strapped over the part with soap plasters.

2. When it is clearly ascertained that the solid body is a new growth, I do not think that medical treatment is of much avail. The pain may be mitigated by applications, or the irritability of the nervous system, generally, may be diminished; warmth and moisture generally increase the pain; but there is not much hope of inducing absorption of the tumor. Excision now remains as the only means from which relief from the pain is likely to result. At the earnest solicitation of the patient, when all other means have failed, excision of even the indurated gland tissue may be performed.

Progress after removal.—Generally the wound heals favourably; but as these growths frequently occur in irritable and delicate females, the cure, in some instances, is not very speedy. Means must therefore be adopted to allay constitutional irritation and the excited state of the nervous system generally.

Result.—According to the variety treated, so, in the one case, the induration is dispersed and the lobe of the gland resumes its normal condition, and with this the pain subsides. After removal these tumors never return, and they never contaminate the constitution; therefore a favourable prognosis may be unhesitatingly expressed.

Morbid anatomy.—The acute pain experienced in these tumors depends, certainly, in some cases upon the implication of nervous filaments. These I have myself traced into the growths. The fact must be admitted, as it is capable of demonstration. The induration of the gland tissue seems to depend upon some chronic inflammation of the existing tissue analogous to cirrhosis of other glands. In this the tissue of the gland is imbedded, and with it, probably, the minute filaments of nerves. The new growths, at least all which I have minutely examined, presented more or less perfect gland tissue, surrounded by condensed uniting tissue, in which the nervous filaments ramify: and hence they agree, in tissue, with the “lobular imperfect hypertrophies.”

The *painful subcutaneous tubercle* differs from the tumor just described, and will be considered hereafter.

GENERAL IMPERFECT HYPERTROPHY.

Cases of this kind are not very common; they present a great increase in the size of the breast, depending upon the development of more or less perfect gland tissue. In the early stage, that is, when the tumor is small, it might come under the class of "lobular imperfect hypertrophy." In some circumstances, however, it differs from these growths, particularly in its size and rapidity of development.

Age.—These new formations generally commence in early adult life, between the ages of 20 and 40 years. In one case a growth of this kind first showed itself at the age of 44.

Social condition.—Some of the patients who presented tumors of the kind to be described directly were unmarried, and several were married. Of the latter some were prolific, others sterile.

The general health.—The general nutrition of the body was well maintained, even to a degree of robustness. The catamenia were normal.

Accidental circumstances.—The commencement of the growth was noticed in two cases *soon after parturition* and *whilst suckling*. Some women have suckled their children during the existence of the tumor, and with the affected breast. One, indeed, suckled three children.

Size and situation.—New growths of this kind may increase to an enormous size, as the two preparations in the Museum of the Royal College of Surgeons of

England testify (Nos. 208, 216). It is remarkable that they generally commence on the axillary border of the gland, pushing it, as their development advances, in the direction of the sternum. The new growth is developed close to, or among, the lobes of the gland; and I believe it always commences within the proper fibrous fascia of the whole organ.

The patient's sensations.—At first, and when the size is inconsiderable, no pain is experienced in the part. At the catamenial periods complaints are made of lancinating pains. It is only after a few months' existence that quotidian and severe pains occur, although even a much longer time is stated to have elapsed before any pain attended the morbid formation; indeed, so long as two years.

External appearance.—The tumor forms a remarkable projection; its surface is in some cases lobulated, in others it is quite even. The nipple is not retracted, but may be flattened. The areola is sometimes spread over a larger surface than usual; sometimes it is unaffected. The variety depends upon whether the tumor enters, much or little, between the lobes of the gland. The veins of the breast, especially the subcutaneous, are often greatly dilated and congested.

Manipular indications.—The entire growth, even when very large, is moveable beneath the skin, but may at last become somewhat adherent to it. It feels firm and heavy, and as if composed of several small portions. It is elastic to the touch, and not hard. It sometimes feels as if quite detached from the mammary gland.

Right or left.—It is a very rare circumstance to find both glands affected, and in the cases I have collected the right has been generally the one presenting the morbid growth.

Duration.—These tumors may continue, for many years, slowly increasing in size. In one instance the disease had existed twelve years; it had been inconvenient, but had produced no ill effects. The affected breast was, in this case, double the size of the healthy. Their progress is sometimes, however, very rapid.

Treatment.—The treatment consists in the exhibition of internal remedies, combined with local applications, to produce, first, an arrest of the development, and then absorption of the new growth. The general treatment will be best carried out by the administration of alkalies with tonics, very mild mercurials, and iodine. It must, however, be admitted that advantage does not result from general treatment. Local pressure occasionally influences the development, and under it a diminution in the size of the tumor may take place; but this, likewise, is frequently only temporary and delusive. After vain attempts to control the increase of the growth, the patient at last submits to amputation. When removal is determined upon, the surgeon should carefully consider whether he can save the healthy mammary gland; and this may be practicable, provided the new growth do not intermingle very intricately with it. In some cases, then, the mammary gland, or a large portion of it, may be saved; in others the entire organ must be sacrificed. The induction

of lactation is useless, the new tissue being imperfectly developed.

Progress.—The progress of these cases after amputation is generally satisfactory, the wound quickly cicatrizing.

Result.—A return of the disease is not to be anticipated, although, as a very rare circumstance, a somewhat similar growth may form in the same breast at some distant period. But a growth of this kind is only developed near the mamma, and it will not contaminate the system at large.

Morbid anatomy.—Whatever be the dimensions of the new growth, the whole is enveloped in a more or less dense fibrous investment. From this, processes pass off into the interior of the mass, dividing it into lobes, and still more minutely into lobules. The terminal divisions are very minute, and the appearances presented by a recent section of a portion of one of these growths are delineated in Plate IV., fig. 2. In this the fibrous tissue is seen taking a tortuous course between the lobules, and becomes lost between the terminal divisions.

Each terminal division is composed of the true secreting portion of the gland tissue,—namely, the terminal vesicles. These are represented in the same plate. They present a delicate *tunica propria*, enclosing epithelium, and held together by either a tolerably well-formed uniting tissue, or by blastema only. I have been unable to find any trace of ducts. The epithelium is shown at fig. *b.*; it is oval and clear, with a minute nucleus. The terminal vesicles are larger

than those of the healthy tissue. Cysts, containing serum and blastema, are often found in the interior of these growths. The mammary gland is often atrophied. —Case LXII.

Pathology.—If we refer to the development of racemose or conglomerate glands, it is not difficult to explain the formation of these growths. Prof. Müller has demonstrated that the evolution of glands, such as the salivary, pancreatic, lacrymal, and mammary, takes place in the following manner:—"The parotid gland in the embryo of a sheep, appears as a white, semi-pellucid canal, running in a curved direction towards the ear, and dividing into numerous very short branches, hardly smaller than the main trunk. This racemose figure is always distinct and transparent in the surrounding gelatinous matter," which is now regarded as the matrix or blastema of the gland tissue. In a child, at any age before puberty,—in the fourth year after birth, for example,—the ducts, and an attempt at gland tissue, are discernible with the assistance of the microscope. In the adult male breast ducts are clearly demonstrated,—indeed, have been injected by Sir A. Cooper. It is therefore clear that the ducts are primary, and that the essential secreting portion is, as it were, a secondary production. This development of the terminal vesicles takes place normally upon the minute ducts, and may continue in excess, forming true hypertrophy. But if the blastema be effused abnormally in the surrounding tissue, where no minute ducts exist, the terminal vesicles become developed, and may go on

increasing to an unlimited extent. This explains also the variety of tissue found in these growths,—in some firm and fibrous, in others soft; whilst occasionally it is quite gelatinous, depending upon the excess and rapid evolution of the blastema. It is, in fact, a perverted local nutrition and development, which, being thus limited, does not contaminate the system generally. Whether these growths depend upon any sympathy with the generative organs, or whether any lesion of innervation be their *fons et origo*, remains to be determined by continued investigations.

The fibrous tumors of the breast described by authors have been lately shown to consist of more or less perfectly developed gland tissue, with or without a well-formed uniting or areolar tissue. In all the cases called “fibrous” which I have examined, I have found the elementary gland tissue to preponderate, but I am not prepared to deny the existence of an hypertrophied condition of the fibre tissue. It often happens, also, that in the cysto-sarcomata large portions of the new growth are composed of imperfectly developed fibre tissue, the fibro-plastic element of Lebert, and others.

Even the renowned “Corps fibreux” of M. Cruveilhier have now been proved to be what I supposed they were composed of,—namely, glandular tissue; and their composition is identical with that of the tumors denominated by me, “Adenocèle, or lobular imperfect Hypertrophy.”

SUB-MAMMARY TUMOR COMPOSED OF IMPERFECTLY DEVELOPED GLAND
TISSUE.

CASE LXI.—A. P., æt. 32, married, but sterile; the catamenia appeared at eighteen years of age, and have always continued regular; she has always enjoyed good health; noticed at twenty years of age an increase of size in her right breast. It slowly increased until she was twenty-four years of age, and then became stationary. Some time after the discovery of the swelling, acute lancinating pains were felt, especially at the catamenial periods, not sufficient to prevent sleep, but interfering with her daily work. The last six months the pains became quotidian, rendering the life of the patient miserable. Compression and preparations of iron proved useless.

She was of rather a sanguineous temperament and robust; she did not present any symptoms of cachexia, and all her functions were healthily performed.

The *right* breast was twice as voluminous as the left, and pendant in front of the chest. Although of considerable weight, no isolated tumor could be felt, but the whole gland seemed simply hypertrophied, and rather more hard than the other. Pressure did not cause pain. The skin covering the gland was healthy, nor were there any adhesions to the subjacent tissues. Amputation of the entire tumor and gland was performed. An attack of erysipelas interfered with the cicatrization of the wound; nevertheless, it very soon healed.

Dissection presented a circumscribed tumor similar in consistence to the breast gland, very lobulated, and united to the surrounding parts by a lamellated cellular tissue, which was very easily torn, and thus allowed the enucleation of the tumor. A section of the tumor presented small cavities filled with a rosy-coloured fluid, rather viscid, and was with facility expressed in great quantity. The entire mass of the tumor was filled with

these cavities, and the solid portions were fibrous, and like the tissue of the breast-gland. The tumor developed behind the breast-gland had flattened the greater part of it. The tumor alone weighed 650 grammes. The elements of the gland tissue were recognized in the new growth by the aid of the microscope. —Lebert, *op. cit.* p. 195.

CASE LXII.—A single country-woman, æt. 30, of not very robust frame, but tolerably good health, discovered at the age of nineteen a hard lump in the left breast. This gradually increased until Nov., 1848, when she was admitted into Guy's, under Mr. Cooper. In the left mammary region was a pendulous mass. The nipple was flattened and expanded, and the skin appeared as if stretched. Around the principal mass three smaller lumps could be felt. Not a trace of mammary gland existed. The tumor was not painful, but she suffered much pain from its weight, and the gentlest pressure over the places of exit of the anterior intercostal filaments caused intense agony. Her temperament was highly nervous and excitable. In the right breast there were two small tumors. Various methods were used to disperse the tumors, but unsuccessfully. She submitted to the removal of the tumor on the left side. It weighed thirteen ounces, was composed of one very large, and three small portions held together by fibro-cellular tissue. The fibro-cellular envelope was carefully dissected, and traces of a sufficient number of ducts were discovered running into the nipple, but having imperforate terminations thereon. They were tubes, nevertheless, in the greater part of their course. The smallest trace of true gland tissue was discernible. These ducts, and the atrophied gland tissue, were traced upon the fibrous envelope of the new growths. The tumors were, in fact, developed within the proper fascia of the gland. The large, and indeed the smaller tumors, were very lobulated. They were not very vascular, although the capillaries were sufficiently numerous to afford a pinkish tint to

the section. Some large sinus-like veins traversed the largest growth. Very little adipose tissue was observable. When minutely examined, the masses were composed of the cæcal terminations of the gland tissue, united together by well-formed fibre tissue. The usual epithelium filled these cæcal terminations. These tumors are in the Museum at Guy's Hospital.

CASE LXIII.—Dr. H. Larrey presented to the Academy of Medicine at Paris, a fibrous tumor of the breast, removed from a single lady above forty years of age. It was stated to have commenced fifteen years before the operation for its removal. The entire mammary gland was involved in the tumor. The whole mass was removed by excision, and when examined by M. Cruveilhier he declared that it was the type of the most complete kind of the fibrous tumors of the breast. M. Mandl then examined the tumor, and found that it was composed of an abundant fibrous tissue, and of the mammary gland. The fibre tissue was composed of fibres in different stages of development; they surrounded the cæcal terminations of the mammary gland, which were recognizable, and free from cancerous degeneration.—*Bulletin de l'Acad. Nat. de Méd.* xiii. 1439.

CASE LXIV.—An unmarried healthy countrywoman, æt. 30, applied to the late Mr. Key on account of a swelling in the axillary region of the right breast. It had been increasing three years. Mr. Key removed the entire organ, nipple, and a portion of skin. The mammary gland was not in a very perfect state of nutrition, being atrophied in parts and in others presenting minute cysts and vesicles. The ducts were pervious in all parts. A new growth had formed upon the surface of more than half of the axillary region of the gland; it was very irregular, lobulated, nodulated, firm, and resisting. The whole was surrounded by adipose tissue, and the skin was unaffected.

After decomposition had commenced, a thick, opaque, white fluid was expressible. The minute cæcal terminations of gland tissue and a large quantity of fibre tissue were seen in the new growth. The preparation is in the Museum at Guy's Hospital.

CASE LXV.—, æt. 27. At 22 years of age, five years since, she first found a tumor in the right breast. Her health had previously been indifferent. The catamenia had always been regular. She looked tolerably healthy, was of short stature, and did not appear particularly excitable.

The tumor had always been most painful at the catamenial periods.

The right breast, which had been even larger, was now about three times the size of the left, which did not present any morbid change. The entire mass felt as if made up of a fluid in the areolar tissue; there was nevertheless a sensation to the touch as if the tumor was composed of two very distinct structures—one hard and firm, the other soft and yielding. It was painful on manipulation, and for some time afterwards.

The skin became œdematous, and the cutaneous follicles very curiously distinct. The superficial veins were dilated, and might be traced running in furrows over the breast.

It had been larger than at present, and now perhaps weighs on the patient from three to four pounds.

The areola was greatly stretched, and the nipple thrust towards the middle line of the body, with at least some part of the gland.

From none of the remedial agents employed did any benefit accrue. Pressure was tried, but without producing any diminution of the tumor.

I saw this girl in the London Hospital, and she was then under the care of Mr. Adams. She afterwards left, and the

breast was removed in the country. Mr. Adams sent me a portion of the tumor, and the general structure of a thin slice is depicted in Plate IV. Fig. 2. The whole mass was very weighty, and composed of lobes of firm fibrous tissue, connected together by common uniting tissue. In parts of the mass were a few cysts containing fluid. The surface of the section was irregular, and the cellular tissue uniting the lobules was of a bluish pearly hue. The whole of that portion which I examined contained the secreting cells of the imperfectly developed gland tissue.

CASE LXVI.—A married lady, without children, of a nervous temperament, but very good general health, applied to Sir A. Cooper on account of a tumor in the right breast. She accidentally discovered this tumor, then about the size of a pigeon's egg, in 1839. It was situated at the upper and inner side of the nipple. In consultation, Messrs. Colles and Carmichael, of Dublin, pronounced the tumor constitutional cancer. At the expiration of fourteen months from the discovery of the tumor it was removed, and Sir A. Cooper considered it to be formed by an enlargement of several lobes of the mammary gland. In its centre were a number of cysts containing a transparent fluid.

From October 1840 until March 1848, she occasionally experienced a little pain in the cicatrix. In the beginning of 1848 she felt more pain in the cicatrix, it changed colour, and the breast enlarged. By the direction of Sir B. Brodie, she took Liq. Potass. in beer, and Ext. Conii. The breast diminished, the pain became less, and she thought herself cured. In March she again felt more pain, the breast rapidly increased, and in October she consulted the late Mr. Key.

The tumor was moveable, regular on its surface, pulpy to the touch, and it had every appearance of the "encysted fungoid disease." Having increased rapidly, and the skin threatening to ulcerate, Mr. Key removed the tumor. It weighed one pound

and a quarter, was soft, elastic, succulent and surrounded by adipose tissue. The portion of cutis removed, in which was the cicatrix of the former wound, was perfectly healthy. The exterior of the tumor was deeply and minutely lobulated, and it had an investment of fibro-cellular tissue. The surface of a transverse section was of a pinkish hue. No opaque fluid was expressible, but only a glairy blastematos, albuminous, and tenacious juice. The entire mass was solid, and composed of minute lobuli of an eighth of an inch diameter, united by an intervening substance. The lobed exterior did not penetrate the mass. The tissue, at first translucent, became quickly opaque after immersion in alcohol.

Minute examination.—The fluid which was scraped off presented oil-globules and nucleated bodies, of two kinds, but different from those of carcinoma. They were of the kind figured in Plate VII. Fig. 6. A thin section presented the terminal vesicles of gland tissue, large and distended with epithelium. There were no ducts. A very imperfectly developed uniting tissue existed between these cæcal terminations. The epithelial cells resembled those of the normal mammary gland, but of larger diameter. This, then, was clearly a tumor formed of imperfectly developed gland tissue.

CASE LXVII.—In the Museum of the College of Surgeons is an immense tumor removed by Mr. Stanley (Prep. No. 208). The woman from whom this tumor was removed had been an inmate of the London Hospital and others, and I have reason to believe her case is related in the Guy's Hospital Reports (Vol. VI. page 203). Mr. Quekett was so kind as to give me a portion of this tumor, and its minute anatomy is depicted in Plate II. figs. 4 and 5. The growth seems to be composed of large quantities of fibre tissue, and the cæcal terminations of the ducts.

The preparation had been a long time in Goadby's solution, and fig. 5 has been treated with dilute acetic acid. My object in introducing this case is to show that the so-called "fibrous tumors" are composed of imperfectly developed gland tissue.

HÆMORRHAGIC DISEASES OF THE BREAST.

Under this term I include all those cases which are distinguished by effusions of blood, either into the cellular tissue of the part or into the ducts of the gland.

The following varieties exist :—

1. Ecchymoses in the sub-cuticular tissue.

a. Traumatic.

b. Idiocratical.

2. Blood discharged from the nipple whilst suckling.

3. Blood effused into the interlobular cellular tissue, and forming tumors containing coagula.

4. Hæmorrhages depending upon morbid growths.

1. *Ecchymoses in the sub-cuticular tissue.*—Little need be said concerning traumatic ecchymoses : they occur as the result of some violence sufficient to lacerate the coats of the capillaries of the cutaneous papillæ, and may occur at any period of life.

But the idiocratical or spontaneous ecchymoses are associated with disturbance of the catamenial function, and if the effusions cannot be considered as truly vicarious they approach very closely to something of this nature.

Age.—The patients are generally young.

Social condition.—They may be single or married.

The general health.—This is often delicate, and the catamenial functions are imperfectly performed. The periods are irregular, and the quantity is deficient or in excess. In fact, menorrhagia, dysmenorrhœa, amenorrhœa, and leucorrhœa, may complicate this affection.

Size of the breast.—The affected breast itself is often rather enlarged, and more distended than the other, or swollen in one part only.

The patient's sensations.—Pains are felt in the breasts and arm before the effusion, or more or less constant uneasiness, which increases to pain, before the catamenial period.

External appearances.—The extravasations resemble the ecchymoses left after the bites of leeches; or, in some instances, those produced by contusions. Occasionally the part becomes quite black and blue. Blood may be effused under the cuticle, which, giving way, allows its escape.

Manipular indications.—Small knots may sometimes be felt in the breast, but they are unconnected with the disease.

Right or left.—Sometimes the right, at other times the left, or even both breasts are affected.

Duration.—In one case the appearance lasted fourteen days, decreasing in brightness daily.

Treatment.—The medicines which are administered with benefit in these cases are those which improve the secretions generally, and which are especially directed

to restore to regularity and health the disordered condition of the uterine secretions. Thus, aperients and tonics are chiefly to be administered, combined with appropriate regimen, exercise, and change of air.

Pathology.—Never having seen a case of this kind, I can only suggest that, in all probability, the extravasations are vicarious; at least, this appears to be the most reasonable explanation of their appearance, particularly since they are always connected, more or less, with arrest, diminution, or some irregularity of the catamenial functions.

2. *Blood discharged from the nipple during suckling.*—During the time of suckling blood may be discharged from the nipple as the consequence of great general prostration and weakness: as, for example, when women suckle during severe illness. Blood may be discharged in considerable quantities at one time, as much as to fill a tea-cup; or the milk may be merely tinged with the blood. It may take place with or without swelling in some part of the gland.

3. *Blood may be effused and form a swelling in the cellular tissue which is composed of coagula or fibrine.*

Causes.—After contusions of the breast it is not unusual for swellings to appear which may attain considerable dimensions.

Sensations.—These swellings may be, in a greater or less degree, attended with pain.

External appearance.—Ecchymoses are seen around the breast, which may continue some time after the accident, and assist the diagnosis.

Manipular indications.—Obscure fluctuation is sometimes felt.

Duration.—The tumor may continue some months unaltered.

Treatment.—An incision should be made, after some time has elapsed, and the contents expressed.

Result.—Blood and coagula, or layers of fibrine, are discharged, and the patient is soon cured.

4. These cases will be noticed in their proper place.

VASCULAR DEVELOPMENTS.

Tumors composed of fibre tissue so arranged as to form a reticulated structure, or an immense assemblage of minute cells communicating with large veins, have been demonstrated.

The most remarkable case, on account of the size of the breast, and the serious results of the operation performed for its removal, is that related by Mr. Image, in the thirtieth volume of the *Medico-Chirurgical Transactions*. It appears to have been an enormous subcutaneous naevus, and to have agreed, in every respect, with the usual anatomical structure of these new growths, a minute description of which is given by me in the same volume.

I believe that they are essentially new formations, not merely morbid changes of normal tissue; and I do not agree with the pathological inferences deduced from the morbid condition of the internal mammary vein, as related in the communication by Mr. Image. This,

however, is not the place to discuss the mode of development of these tumors; it is sufficient for me to state that they may be found in the mammary gland.

In the skin and the subcutaneous tissues they are often met with; but their existence within a gland, I presume in the interlobular areolar tissue, is a new fact. One other case only have I encountered, and that is recorded in the *American Journal of Medical Sciences*, No. xxxv.; but there may be a doubt expressed as regards the genuineness of this structure, as it is stated to have been mingled with encephaloid matter.

The case of Mr. Image demonstrates forcibly the danger of delay in the treatment of these cases. One of the most prominent features in this case was the steady increase of the disease, and if pressure had been employed, it would probably have advanced in some direction not visible to the surgeon.

Early strangulation of the entire mass by passing ligatures under the tumor, in such a manner as to arrest the supply of blood without destroying the skin, is the treatment that should be adopted.

HYPERTROPHY OF THE ADIPOSE TISSUE AND STEATOMA.

Cases of morbid growths consisting of adipose tissue are related by Cooper, Brodie, Guthrie, and Warren. The morbid development takes place either behind the gland, around it, within its fascial envelope, or between the lobes.

Age.—This disease may exist at the early age of twenty-eight years.

Size and situation.—The breast may present an enormous size, measuring thirty-one inches in circumference. The tumor is situated behind the gland, or in the substance of the breast.

The patient's sensations.—No pain is felt at first, but after a time more or less annoyance is experienced from the weight or size.

External appearance.—The surface of the breast is smooth and regular ; it may, however, become red.

Manipular indications.—To the touch the tumor feels as if composed of hypertrophied lobes of gland tissue, and in fact it very often happens that the adipose tissue is hypertrophied in conjunction with the same state of the glandular.

Duration.—These growths may exist for twenty-two years, slowly enlarging, or, only a few months, with rapid increase.

Treatment.—Excision is the only means by which the mass may be removed, and the gland should be always preserved when practicable.

Morbid anatomy.—Common adipose tissue forms the basis of these morbid growths, and may be developed to the extent of fourteen pounds ten ounces. The interlobular fat appears to be hypertrophied. There is no change in the true glandular tissue.

Result.—Removal is effected with perfect safety, and as the disease does not return, the operation is one of a very successful and gratifying character.

CASE LXVIII.—Dr. Bécourt, of Thann, in Alsace, showed M. Lebert a fatty tumor which the former had extirpated from the breast. M. Lebert examined the tumor, and found that it consisted of a little cellular tissue, with lipomatous masses growing throughout it.—Lebert, *Abhandlungen*, &c., p. 289.

CASE LXIX.—Mrs. Smith presented an enormous tumor in the left breast. It commenced behind the gland between it and the pectoralis major muscle. The entire gland was pushed forward by the new growth. It was removed, and its weight was fourteen pounds ten ounces. The tumor was composed of fat. The patient recovered.—Sir A. Cooper, *Illustrations*, &c., p. 67; and *Lect.* by Tyrrell, ii. 213.

CASE LXX.—M. presented a tumor in her breast of great size, which felt like hypertrophy of the glandular lobes. The fat between the lobes of the gland, which were healthy, seemed to be hypertrophied. This was all removed, and the patient was cured. There was no return several years afterwards.—Sir A. Cooper, *op. cit.*, 68.

CASE LXXI.—A married woman presented a tumor of the breast, the nature of which surgeons could not diagnose. When cut down upon, it proved to be a great mass of fat. It was situated under the mammary gland, which, being large, completely concealed the tumor.—Sir B. C. Brodie, *Lect. on Path. and Surg.*, p. 271.

CASE LXXII.—A married woman, æt. 28, presented enlargement of the left breast. It was smooth and regular, the skin hot and red. It had existed only a few months, and the increase was rapid, but painless. Excision was effected, and the mass proved to be an increased growth of the interlobular adipose tissue. Weight eight pounds. There was no return, but a tendency to enlargement in the right breast.—Warren, *On Tumors*, p. 228.

DISEASES OF INNERVATION.

MAZODYNIA (ὁ μαστός the breast ; ἡ ὀδὴνῃ pain). This word signifies a painful state of the mammary gland. Cases of this disease appear to be divisible into two classes sufficiently distinct from each other :—

1. *Without induration*, but with or without temporary enlargement.

2. *With general or partial induration*, and often, but not always, temporary.

Class I.—WITHOUT INDURATION.

Age.—This neuralgic affection generally occurs before the cessation of the catamenia, very often in early life, more rarely during the middle periods.

Social condition.—It does not appear to be peculiar to any particular social state ; for the single and the married, the prolific and the sterile woman, are liable to the disease.

The general health.—The bodily health of the sufferer is apparently good. The nervous system may be, however, in an excitable state. The catamenia are frequently irregular both in quantity and quality, and amenorrhœa or dysmenorrhœa are ordinary accompaniments.

Accidental circumstances.—In one case the pain commenced during pregnancy, and returned about the time of each catamenial period.

To what attributed by patient.—One woman traced the commencement of the disease to fright, and in ano-

ther instance the surgeon believed that it originated in some syphilitic taint communicated by the husband, but upon very insufficient grounds.

The patient's sensations.—Violent pain may be felt continuously both during the day and night. First a sensation of cold, then of heat, is experienced. The pains extend to the shoulder, down the arm to the elbow and hand, to the neck, and even to the hip. They are greatly increased by manipulation. When occurring during pregnancy, they may be so severe as to threaten abortion. There is sometimes, likewise, great pain and irritability along the spinal column, and very slight pressure over the points of exit of the middle and anterior branches of the intercostal nerves causes intense pain.

The external appearance.—The affected breast is often enlarged, but no solid tumor is discoverable.

Manipular indications.—It sometimes happens that no alteration in the conformation of the breast is detected by the touch, but in other cases a manifest fullness may be distinguished. This enlargement takes place periodically and contemporaneously with the catamenia, or immediately before their appearance. The peripheral portions of the lobes are often more affected than the centre of the gland.

Right or left.—Both glands are often affected, either at the same time or alternately. One only may continue to be troublesome.

Duration.—These neuralgic affections often last a long time, not with equal severity ; but improving, and

then relapsing, and again improving, they may continue for months, and even years. When menstrual, the pains last for two or three days together.

Treatment.—The general treatment must be directed *first* towards the alvine secretions, which are usually more or less disordered. With this view, aperients or purgatives should be prescribed. Afterwards alteratives and mild tonics, vegetable or mineral, and change of air, will be beneficial. The local applications consist of sedatives, either opium, conium, or belladonna, in extract, with ceratum saponis; and in patients who will bear the loss of blood, local depletion by means of three or four leeches applied twice in the week. When the breast is pendulous, supporting the organ by means of a flannel roller passed over the shoulders affords relief.

Results.—In some cases cure, in others relief, is effected by the above means. But it must be admitted that there are cases in which all medical treatment proves unavailing.

Morbid anatomy.—The condition of the gland when thus affected is involved in obscurity, nor is it probable that any active morbid change has taken place in it. A state of hyperæsthesia exists, for which there is not any equivalent structural change to be detected.

CLASS II.—WITH INDURATION.

Age.—This disease occurs between the ages of seventeen and fifty years.

Social condition.—Both single and married women, prolific and sterile, are obnoxious to its attacks, yet most frequently the married but sterile female.

The general health.—Although this is stated by the patient to be good, some irregularity may frequently be discovered as regards the catamenial secretion. In some cases even a decidedly disordered condition exists.

To what attributed by the patient.—Contusions are generally described as giving rise to the disease, and with good reason, at least in some cases. Protracted and frequent lactation is also said to be a fruitful source of this disorder.

Size and situation of the induration.—The whole gland is a little increased in dimensions, and there is more or less general induration, particularly about the peripheral extremities of the lobes, and at the axillary border of the gland. This induration may be, however, of limited extent, and its period of existence is very variable, continuing often only for some hours, attacking one lobe, then another, or passing across to the opposite breast.

The patient's sensations.—The pain experienced by the sufferer is often of a very severe kind, and may be continued, paroxysmal, or alternately affecting one breast and then the other. The region is exquisitely sensitive to the touch, particularly when pressed from side to side, but not so severe when pressed against the thoracic parietes. A continuously dull or a sharp lancinating pain is described which is either confined

to one spot or takes fixed and definite directions. It is usually increased a day or two before the catamenial periods, and it becomes less when they have passed away.

External appearance.—The affected organ appears somewhat enlarged, or may remain unaltered. It has the appearance as if full, and is of a conical shape, like the breast of a woman in the early months of uterogestation. The nipple is prominent, and this, with the areola, may have a darker tint than usual. The skin of the breast is unchanged in colour. In women who have never suckled, the nipple and areola present a peculiar conical aspect and fulness.

Manipular indications.—Lobular induration may be felt in various parts of the gland, or small globular knots or nodules, about the size of peas or beans, may be detected, especially towards the peripheral terminations of the lobes.

Right or left.—Both the breasts are rarely affected simultaneously, but first one and then the other.

Duration.—The more severe paroxysms last but for a few days; nevertheless, the affection may remain better or worse for many months, or even for years.

Treatment.—The remedial measures to be employed are of the same nature as those described for the first class of cases. Gentle pressure, with ointments of extracts of belladonna or opium, and a mild mercurial by means of stripes of plaster over the part, are often beneficial. Resort has been had to excision at the earnest solicitations of the patient. Subcutaneous

incisions throughout the gland—with what view it is difficult to comprehend—cannot be too strongly deprecated, although recommended by a French surgeon.

Progress.—The pains sometimes cease suddenly, relapse, again pass away, and again return; and perhaps there is scarcely a more disappointing disease than this to treat. Medicines are very long in affording the desired relief, and often the pains appear to subside spontaneously. In the case of a girl who suffered very severely, the neuralgic pains ceased after marriage.

Result.—It is satisfactory to be able to assure the patient of the innocent nature of these indurations, and that although they are with difficulty cured of the pains, yet that this very source of torment is one of the best proofs of the innocuous character of the malady, and of their immunity from a more frightful and distressing disease.

Morbid anatomy.—I have examined two breasts removed on account of induration and extreme morbid sensibility. In them I found the glandular tissue atrophied, the ducts in some parts dilated, a few scattered and very small duct-cysts containing fluid, and the uniting areolar tissue very much condensed and indurated. A duct in one of the glands was dilated, and it contained some solid matter, consisting of epithelial cells and fatty matter. To this condition the term “Cirrhosis” has been applied.

I have appended a few cases only, as, unfortunately,

these affections are but too common, and frequently most intractable.

CASE LXXIII.—CHRONIC PAINFUL INDURATION OF THE MAMMA.

The patient, a delicate, fair, but healthy looking woman, 30 years old, had been married seven years. She had had two children; the last was born five years since, and she suckled this child fourteen months. Whilst nursing the last infant she suffered with abscess of the right mammary gland. She continued for a time to give suck with this one occasionally, but in consequence of the malady the left had to do nearly double duty. At that time even she felt a swelling and hardness at the upper and axillary border of the left gland, which, however, gave no pain or inconvenience. The last three years she has been more or less troubled with pain in the part. The catamenia are regular and natural. I could feel a very distinct, hard, moveable, and painful induration, the size of a walnut, somewhat lobulated, but regular on its surface, deeply imbedded in the left gland. The whole mammary organ was rather firmer than usual, and somewhat knotty. The induration on pressure was exquisitely painful, and the pain continued some time after handling. She does not recollect having ever received any injury to this part.

The induration was not in the thickest part of the gland, but rather on the border at the upper and axillary angle. The nipple was not in any way affected, being full and prominent. Although distinct, the hardness was not sharply defined, but it blended with the surrounding tissues. The plan of treatment adopted was attention to the bowels, purgatives and mineral and vegetable tonics, iron; and under this she recovered.

CASE LXXIV.—MAZODYNIA OF THE LEFT BREAST FOLLOWING A VIOLENT CONTUSION.

C. C., æt. 50, was a robust, rather fat and healthy looking woman, unmarried, with very large and full mammæ. Her countenance was rather expressive of anxiety. Her health pretty good, bowels habitually costive. Her habits of life regular and sedentary. Catamenia had ceased for five years. Three months before applying to me, she received a violent blow upon her left mamma, whilst walking along, from the elbow of a man. The skin after a day or two was ecchymosed, the part swelled a little, and the pain was very severe.

In September, 1846, I could feel a little hardness in the upper and outer quarter of the gland, which was very painful on manipulation, and over which the skin's healthy tint was somewhat deepened. The hardness, however, scarcely exceeded that of the other gland.

℞ Ext. Conii, gr. iv. ; Pil. Hyd. gr. j.

M. fiat pil. nocte maneque sumend.

℞ Quin. Disulph. gr. ij. ex Inf. Rosæ, ℥j. ter die.

October 8th.—She was rather improved, but felt sick after the medicine. The mamma had been much less painful until yesterday, when the pain returned. Her pulse was rather low.

℞ Ammon. Sesquicarb. gr. xl.

Sacchari fæcis, ℥iv.

Tinct. Lavandulæ c. ℥iv.

Aq. Menth. pip. ℥vij.

Aq. destil. ℥iv.

Capt. coch. ij. ter die.

16th.—She was much improved in every respect, and the pain

both in the breast and its neighbourhood much diminished. Bowels rather confined.

Perg. et adde sing. dosibus
Sodæ Carb. excicc.
Rhei Contriti, sing. gr. iv.
Calumb. Contrit. gr. viij.

22nd.—Pain had again returned rather severely.—Pergat.

November 2nd.—She was obliged to carry the work home for her employers, and had, in consequence, been once or twice wet through with rain. Her breast had been more painful, with erratic pains through the left scapula. Bowels costive.

℞ Pil. Hyd. gr. j. ; Ext. Conii, gr. iv. o. n.
℞ Magnes. Carb. ℥j.
Magnes. Sulph. ℥j. Aq. Menth. pip. ℥xij.
M. Capt. ℥i. ter in die.

17th.—Her bowels had been freely open—in fact rather relaxed, and she had suffered from slight attacks of pyrosis.

℞ Sodæ Sesquicarb. gr. x.
Inf. Cascarillæ, ℥j. ter die.

Dec. 1st.—She had endured considerable grief in consequence of a death in her family, the depressing effects of which led to a repetition of all her former symptoms. The pains in the shoulder, however, were greater than in the breast.

Rep. Pil. ; et ℞ Inf. Sennæ,
Inf. Cascarillæ, aa. ℥ss. bis in die.

January 1st, 1847.—Since last report I have seen her several times, and she had gradually improved, although the pains from which she was free one day returned the next.

February 1st.—Her health had greatly improved during the past month under mild tonics and aperients. The pains in the breast, however, returned at intervals.

March 1st.—Pains continued, but her general health was greatly improved.

R Empl. Belladonnæ part. affect.

R Potass. Hyd. gr. ij. ex. Inf. Calumb. ʒj. bis in die.

April 1st.—The breast was still painful, and after manipulation she complained of a gnawing sensation, which continued some time. Her health continued to improve, feeling stronger, and having a good appetite. No circumscribed hardness could be detected.

Applic. Hirud. iv.; et postea

Cerat. Saponis, ʒij.

Ext. Belladon. ʒj.

M. Fiat unguent. part. aff. appl.

R Syr. Ferri Iod. ʒj.

ex Inf. Calumb.; t. d.

May 1st.—During the past month she had been free from pain for longer intervals, nor had the pains been so acute.

6th.—She applied two leeches a few days ago, and the pain had since been less.—P.

18th.—The sensation in the breast was now rather that of soreness than pain.

31st.—Going on well.—Rep. Hirud. ij. et P.

June 30th.—During this month the pains have recurred but rarely, and she felt very well in general health. She had given up taking medicine regularly, but only occasionally an aperient.

I saw this patient in January 1850, and she was quite well.

CASE LXXV.—MAZODYNIA SUPPOSED TO DEPEND UPON A SYPHILITIC TAIN.

M. Murat writes : The following case was communicated to me by M. Champion, of Bar-le-Duc :—A lady, married to an old officer, and mother of two children, experienced pain in the left breast, arising without any known cause ; there was neither tumefaction nor engorgement ; the breast was painful to the touch. Baths, antispasmodics of every kind, opium topically and internally administered, blisters, and leaves of tobacco, were tried. The inutility of all these means,—the increase, although slight, of the pain during the night, determined M. Champion to employ mercurial pills. The success surpassed his hopes, for the pain disappeared without returning. The husband of this lady had had formerly venereal ulcers, for which he underwent treatment. Since that time he had never experienced any symptom of a syphilitic nature ; the health of his children had never degenerated. Since her cure this woman has had two children. Her husband, her children, as well as herself, have always preserved their health.—M. Murat, art. *Mastodynie*, *Dict. d. Méd.* Paris, 1826.

ATROPHY OF THE MAMMARY GLANDS.

This morbid condition of the breasts commonly occurs at the more advanced periods of life, and after the cessation of the ovarian functions.

Independently, however, of this, it may be met with in youth and the middle periods of life.

It may be found as the result of defective development in the first instance, or of deficient nutrition in after years, when it is associated in all probability with

a more or less atrophied or morbid state of one or both ovaries.

It is said, also, to ensue upon a long-continued lactation, or an excessive secretion of milk, as well as to result from the effects produced upon the constitution by the internal administration of iodine, which had been prescribed for various complaints.

The true character of atrophy is the disappearance of the terminal vesicles, or proper secreting portion of the organ, in the place of which adipose tissue may in some cases be developed. In other instances no morbid appearance is discoverable upon dissection, but the ducts are seen, and their ramifications with the remains of the fibrous envelope or fascia of the gland. The nipple is persistent, even when there is no trace of true gland tissue. It may be even large and prominent.

With atrophy of the gland are associated some forms of morbid growths. Thus, tumors depending upon disease of the ducts are very often found in conjunction with atrophy of the secreting portion; also cysto-sarcomata, and even new growths, composed of the terminal or caecal extremities of the ducts, united together by more or less perfect areolar tissue.

CASES OF ATROPHY OF THE BREASTS.

CASE LXXVI.—ACTION OF IODINE UPON THE MAMMARY GLANDS.

When it is upon the glands that the action of iodine is manifest, its action appears to persist a long time after the cessation of its use: for example, the young girl cited by Hufeland

(June 1824), who, after having used iodine for six months to resolve a goitre, noticed her breasts sink away and diminish, in spite of the cessation of the medicine, to such a degree that at the end of two years there was no longer a vestige of mammary glands.—*Mém. de la Société de Chirurgie de Paris*, t. i. p. 1.

CASE LXXVII.—IODINE USED IN HYPERTROPHY OF THE GLAND BY M. BARBIER, OF AMIENS, AND IN 1825 BY DR. DELFIZ, OF MORLANS.

The knowledge of the atrophy of the mammary glands during the use of iodine has been made profitable in the treatment of certain diseases which attack them. Thus, it is a long time since M. Barbier of Amiens, recommended iodine for hypertrophy of the mamma; and since 1825, Dr. Delfiz, of Morlans, has happily employed the iodide of potassium for the same affection. This practical fact has been preserved in the *Journal de Physiologie*.

We may also see in the *Dictionnaire en 30 Volumes*, under the article Hypertrophy of the Breasts, by M. Velpeau, that iodine given in all forms, in such a manner as to make all the organs absorb it, will be found the most powerful remedy against this disease.

Applications and frictions of ointments of iodine in chronic engorgements of the breasts are of daily use, and they are of great service as single medications; but when we add to them iodine taken internally, resolution takes place more quickly. I (M. Cullerier) have had many opportunities of combining the local and general medication, and I have sometimes found good arise from it; however, this may not be without inconvenience, because if there be only one diseased breast, the other may submit to the influence of the iodine and become atrophied. Among some observations of this kind, here is one which has passed under my eyes.—*Op. cit.*, p. 12.

CASE LXXVII.—HYPERTROPHY (?) OF BREAST, TREATED WITH
IODINE.

In the month of May, 1843, I took into the hospital of Lourcine a young woman 25 years old. She was the mother of three children, and confined with the last four months since which she did not suckle. As a consequence of her confinement, she had in her right breast an enormous and deep abscess, which I opened with the bistoury. Particular circumstances prevented my seeing this patient, and I thought her entirely re-established in health, when she came to ask admission into the hospital, although she was not syphilitic, that she might receive the care which she would not otherwise have on account of her distance from Paris. She informed me the abscess had discharged for about six weeks, at the end of which time it had closed and her health had been good. But one day she had the breast violently bruised by one of her children; it became tumefied, painful, and increased in volume. On her entry into the hospital, I found all the signs of chronic mammitis with hypertrophy. I had recourse to emollient cataplasms, to mercurial frictions, and, in the commencement of the treatment, to purgatives. Swelling and pain in the gums having compelled me to suspend the mercurial ointment, I substituted the Ceratum Plumb. Ioduret., and, wishing to hasten the cure, I prescribed the Ioduret of Iron internally. I gave a preference to this preparation, because the woman was very lymphatic. At the end of a month the treatment had effected wonders; but, at the same time that the resolution of the diseased breast was effected, the other diminished visibly to the eye. When I saw this energetic action I suspended the iodine, but already the blow was struck, and three weeks later, when the patient left the hospital, the breast which had not been diseased remained flaccid, and diminished nearly one-half. The husband

of this woman informed me, six months after, that the breasts began to reassume their normal condition.—M. Cullerier, *op. cit.* t. i. p. 13.

CASE LXXIX.—ATROPHY OF THE MAMMARY GLANDS AFTER THE USE
OF POTASS. IODID., AND MERCURY.

M. Cullerier writes — “Some years since I attended in the *Maison de Santé* of Dr. Dufresnois, a very young girl affected with suppurating periostitis of one tibia, which succeeded a syphilitic sore for which she had not undergone any active treatment. During a month or five weeks she had taken mercurial pills, and I judged it advantageous to put her upon the use of the Iodide of Potassium, and I made her take at first a *gramme* a day. At the end of a little time, the medicament being well borne, I increased the dose to two *grammes* in the twenty-four hours. But a week had not elapsed when the patient, who took great care of her personal appearance, believed she perceived that her breasts had become soft and flaccid. However, not finding these organs altered, as she pretended, I advised her to continue, and six days passed without my seeing her again. But she then reproached me violently, for having, in spite of her complaints, continued to employ the iodine, causing a continual diminution of her breasts to the eye, and she signified that she would listen no longer to it. Having again examined them, I actually discovered an extraordinary falling away of both glands, which were flaccid and without firmness; one could by no means be deceived with regard to the flaccid tissues, for this young girl was rather lean, and it was easy to determine that it was really in the mammary gland that the change had occurred. The breasts were a very long time returning to their former aspect.—Cullerier, *op. cit.*, pp. 14, 15.

CASE LXXX.—ATROPHY OF THE MAMMARY GLANDS. DISEASED
OVARIES.

I found the mammary glands of a woman in a remarkable state of atrophy, although only 42 years of age. She had been married, had had scarcely any sexual intercourse, and never been pregnant. She died of anasarca and ascites consequent upon renal disease, and some obscure diseased condition of the absorbent system.

There was scarcely a trace of the mammary glands; but the nipples were very large and flabby.

The ovaries were much involved in peritoneal adhesions of old standing, and they were also atrophied and very flaccid.

OF THE PAINFUL SUBCUTANEOUS TUBERCLE.

This formation, which occurs in other parts of the body, is also met with in the female breast. Usually only one exists, and if there be more they are isolated.* Removal is the only means by which to relieve the sufferer from her trouble.

ENCHONDROMA.

I am not aware of any preparation in London demonstrating the growth of cartilage tissue in the female breast. Sir A. Cooper states, that a patient applied to him "for a swelling in the breast, which she had observed for fourteen years." She was 32 years of age, therefore the tumor had been growing from her

* Dupuytren, *Lec. Orales*.

eighteenth year. It was removed, and upon examination the swelling presented two portions: "the larger portion of it had the appearance of that cartilage which supplies the place of bone, in the young subject: the remaining part was ossified." He gives a plate of it, but I do not know where the preparation is to be seen. Prof. Müller also states that enchondroma may be developed in the mammary gland.

OSSEOUS GROWTHS AND CONCRETIONS IN THE BREASTS.

Sir A. Cooper mentions the existence of osseous matter in conjunction with cartilage; and cases of either osseous masses or concretions are related by Morgagni, Bassius, Lieutaud, and Haller.

TRUE HYDATID CYSTS DEVELOPED IN THE MAMMARY GLAND.

Until lately, the presence of entozoa within these cysts was unknown. They have now, however, been minutely described, and their generation demonstrated, by Mr. Busk. The name of *Echinococcus hominis* is given to them, and they are characteristic of the true hydatid. There are, nevertheless, other characters sufficiently marked by which this cyst can be distinguished from every other. Some of these peculiarities will be mentioned under the head of morbid anatomy. I have had the opportunity of examining a cyst of this nature, and I believe it to be the only instance in

which the presence of echinococcus has been demonstrated in a cyst developed in the female breast.

Age.—This form of disease may be met with between the ages of 21 and 50 years.

Social condition.—The majority of the cases occur in married women.

General health.—Uninterrupted good health is enjoyed by the patient, nor is there any marked change produced as the tumor becomes developed.

History.—In most of the cases which I have collected the disease was supposed to be "scirrhus;" meaning, I presume, carcinoma, or implying a disease of a malignant character.

Size and situation of the tumor.—The size of the tumor varies from an inch to three or four in its largest diameter. It may be globular or oval. The affected gland may appear to be double the size of the healthy one; and it may be so large as to render the diagnosis extremely difficult. The cyst may be developed in any part of the organ.

The patient's sensations.—Pain is felt in a circumscribed spot, and it may be slight, severe, or even insupportable when the part is touched. In some instances no pain is complained of, but a sense of coldness and uneasiness is experienced.

The external appearance.—As the growth increases the centre becomes projecting, and even ulceration of the skin may take place.

Manipular indications.—An apparently solid, hard, unyielding tumor is felt, even "as hard as a stone,"

perfectly regular and lobulated. After some time the hardness changes to an indistinct fluctuation, which, by degrees, becomes very clear.

Right or left breast.—Either the right or left breast is affected; in no case both, simultaneously.

Duration.—One woman had a tumor of this kind in her breast for five years.

Treatment.—Either incision or excision may be practised, but the latter is, I believe, preferable; for if only incised the cyst is sometimes a long time in coming away.

Result.—Perfect cure attends this operation as soon as the cyst is removed.

Morbid anatomy.—A cyst may exist which runs under the pectoralis major muscle, and contains secondary cysts or hydatids of various sizes. They have been discharged from an abscess in the breast. The secondary cysts vary in size, from the most minute points to one inch in diameter. The cyst is white; the fluid limpid, like water, in which the small cysts float about. The parent cyst is thick and tough, and surrounded by condensed cellular tissue; its own proper tissue, firm, rigid, and translucent, is easily separated into laminæ, which curl upon themselves when detached. There are small irregularities upon its inner surface which present a peculiar concentrically-arranged fibre when magnified. The tentaculæ of the echinococcus, or the entozoa themselves, may be seen with magnifying powers, either in the fluid of the cysts or attached to their walls.

CASE LXXXI.—HYDATID CYST IN THE BREAST, CONTAINING ECCHINOCOCCI; REMOVED BY MR. B. COOPER.

October 28th, 1846.—Mary Doyle, æt. 51, had a lump in her left breast six years. She never suffered any pain in it, but wished to have it removed, as it was a source of annoyance. It felt firm, but not hard. When removed, an incision was made into the tumor, and some clear fluid escaped. The collapsed cyst presented all the characters of an hydatid. Upon its internal surface I saw minute projecting bodies which, under the microscope, displayed a very beautiful arrangement of concentric laminae. I detected ecchinococci with the microscope, and an abundance of their peculiar tentaculæ.

It was equal in size to a walnut of ordinary dimensions.

VARIABLE, TEMPORARY, AND SUDDEN INCREASE IN THE SIZE OF THE BREASTS.

Cases of this kind are very rare; and as I have never witnessed an instance, I am compelled to relate the particulars of them upon the authority of others.

Age.—Youth seems to be the period when these affections most commonly occur.

General health.—In one case this appears to have been unaffected. In a second, the catamenia were irregular or suppressed. In a third, sudden suppression of the menstrual function, by placing the feet in cold water, appears to have induced the enlargement. And, in a fourth, it was contemporaneous with intermittent fever.

Size.—The size which it is stated that the glands at-

tain is almost incredible. In one case they are said to have been so large as to compel the patient to continue in the recumbent position. In another, to have been equal in weight to thirty pounds.

The patient's sensations.—The patient complained of a sense of heat and pain, but not of a severe character.

External appearance.—The breasts had the appearance of being very large and swollen.

Manipular indications.—To the touch they were resisting, feeling firm and hard.

Both affected.—Both breasts were affected in all the cases.

Duration.—In the case occurring with intermittent fever, the increase lasted during the attacks of the fever only. In another case for a period of three days.

Treatment.—The treatment must be directed towards the restoration of the arrested function; and with this view medicines acting on the secretions generally should be administered. Hip-baths, bleeding from the feet, aperients, and any means likely to restore the catamenia, must be had recourse to. Quinine was given in the fever case. Evaporating lotions may be applied to the breasts.

Results.—In all the cases which I find recorded, the breasts resumed their normal dimensions.

Morbid anatomy.—It is difficult to suggest the precise morbid condition of the gland during these attacks. In all probability, however, the appearances depend upon congestion or engorgement of the blood-vessels.

It is not likely that any effusion takes place, since the organs so quickly resume their normal state.

CASE LXXXII.—ENORMOUS AND SUDDEN SWELLING OF THE BREASTS.

A very remarkable example of prodigious and sudden swelling of the breasts was that observed in 1704, in a woman of the middle class, aged 29 years. She enjoyed good health, when, at the period of the catamenia which flowed away in a perfectly normal manner, she washed her feet. Immediately after, the catamenia ceased, and at the same time the breasts became the seat of pains and swelling which, during the night, arrived at such a pitch that the patient was unable either to rise or move in bed; it continued until being bled from each foot, when she recovered in the space of three days, and the mammæ returned to their natural size.—*Éphémérides des Curieux de la Nature*, cent. 1 and 2, p. 136; *Obs.* lxvii.; M. Bérard, p. 13.

CASE LXXXIII.—ENORMOUS SWELLING OF THE BREASTS.

A woman, aged 20, of Royaumont, near Castres, found her breasts developed in so prodigious a manner that they might weigh thirty livres, and she was under the necessity of carrying these enormous breasts suspended from her neck, surrounded with a bandage, and not without pain.

She came to consult me. I prescribed what I thought proper to direct the catamenia, which had not appeared, towards the inferior passages; among other things, bleeding from the feet, cupping at the inferior parts, aperient mineral waters, and evaporating lotions to the breasts. I knew, in fact, the wonderful sympathy between the ovaries and the breasts,—that the matter which does not escape by any one of these organs is directed towards the other,—after the precept of Hippocrates,

who applied cupping to the breasts to arrest the menstrual flux. Under the influence of this treatment the catamenia were not long in appearing, and the swelling of the breasts was dissipated.

This cure, perhaps, may be placed among the number of the most curious and worthy to be noted ; for this tumor was a sight so hideous, and had acquired such dimensions, that the patient went to a surgeon with the intention of having the breasts amputated."—Borelli, *Obs.* xlvi. p. 50.

CASE LXXXIV.—REMARKABLE ENLARGEMENT OF THE BREASTS CONCOMITANT WITH INTERMITTENT FEVER.

Last year, says M. Ferrus, surgeon of the Military Hospital of the Dey, at Algiers, I attended a young Spanish woman attacked with intermittent fever contracted in the province of Oran. At my third visit she drew my attention to the hardness of her breasts, and their increase of volume. There was heat and pain which extended under the axillæ. Struck with the observation, I thought that the fever must be only symptomatic of engorgement of the thoracic glands, and that I ought to combat it to cure it. Stating this opinion to the patient, she answered, "that only takes place during my attacks; once passed, there only remains a little pain; and I foresee the return at the moment when it makes me feel more acutely with augmentation of their size,—not a little remarkable in my state of health."

In fact, the administration of Sulphate of Quinine, continued many days, caused this hypertrophy to disappear, so frequent in the spleen and the liver, and not yet noticed in the organ of which I have just spoken. I communicated this fact to many of my companions at Algiers; they all replied that they had never had the opportunity of verifying it. It has been com-

municated to the Academy of Medicine, where it has passed entirely unnoticed.—Dr. Ferrus, *Annuaire de Méd. et de Chirurgie*, 1847, p. 203.

SEROUS INFILTRATION OF THE AREOLAR TISSUE AROUND
THE MAMMARY GLAND.

I have never seen a case of this nature. The most remarkable instance is that recorded by Kobers and Cerutti.*

Age.—The patient was twenty-nine years of age.

Social condition.—The woman was married and prolific.

General health.—Until pregnancy her general health was very good.

History.—The breasts increased greatly after delivery; the infant would not take the breast, and they became distended. Considerable increase took place during the pregnancy.

Situation of the serum.—The serum appeared to be effused into the cellular tissue around the mammary gland, and it extended to that of the abdomen.

The patient's sensations.—Shooting pains were complained of, and the weight of the breasts was insupportable. There were no inflammatory symptoms whatever.

The external appearance.—The aspect of the skin was natural.

* Meckel's Archiv, &c., 1830, S. 281.

Manipular indications.—The breasts felt enormously voluminous and heavy. In some parts they were soft; even fluctuation was detected. The skin was œdematous.

Right or left breast.—Both breasts were affected, one more than the other.

Treatment.—The local treatment adopted in this case consisted in making scarifications, and the constitutional in the exhibition of various drugs.

Progress.—A large quantity of fluid escaped after the incisions were made.

Result.—After the serum had escaped, the glands were felt like stones enclosed in an empty flask, and a kind of hernia of the gland took place. They at last became soft, and the integuments flaccid and pendant.

The case is too long to quote, but is very interesting.

“HYDROPS SACCATUS MAMMÆ.”

Of this disease I have never seen an instance, and the name is quoted from a German periodical (Oppenheim's *Zeitschrift*, xxx. S. 357).

Age.—The two cases with which I have met on record were of the respective ages of 24 and 30 years.

Social condition.—Both were married women, and both were prolific; they were even suckling at the time the disease appeared.

The general health.—The general health of the patients was very good.

History.—In one case the breasts were slightly developed. In the other, the secretion of milk diminished daily, and at last became entirely arrested in the right breast.

Size.—In one month the right became three times the size of the left breast, and in three months it was enormous.

The patient's sensations.—A sense of weight and malaise was experienced by the patient.

The external appearance.—In consequence of the state of distension the nipple was lost sight of, and the skin was shining.

Manipular indications.—The natural elasticity of the parts continued, and fluctuation was felt very deeply.

The treatment.—The local treatment consisted in making a puncture or incision, and, after the fluid had escaped, in the application of compression.

The result.—A clear fluid escaped, and in one case a delicate cyst was withdrawn. The breast became of its natural size after the evacuation of nine pounds of a limpid, serous, inodorous fluid. The disease was cured in both patients.

CASE LXXXV.—HYDROPS SACCATUS MAMMÆ.

Thorstensen (Oppenheim's *Zeitschrift*, Bd. xxx. 3, S. 357) observed a case of this complaint in a woman who was suckling, æt. 24 years. The tumor was the size of a child's head, and the skin covering it of the natural colour. Upon opening it clear water flowed out, when the delicate sac, easily broken up

between the fingers, was drawn out. The wound was united with charpie dipped in Balsam of Peru, and healed in sixteen days.—Canstatt's *Jahresbericht*, 1846, Bd. iv. S. 270.

DISEASES OF THE FUNCTION OF LACTATION. ENLARGEMENT OF THE GLAND PRIOR TO THE SECRETION OF MILK.

MILK FEVER.

When the secretion of milk takes place for the first time, there is often very great sympathetic excitement of the constitution.

“Milk fever” is the term usually applied to this condition of the individual, and its symptoms are as follows, viz. :—

Acute pyrexia, preceded by shivering ; the breasts are hard and painful, and occasionally even delirium may supervene. The severity of the symptoms, however, generally subside upon the appearance of diaphoresis ; and after sleep the patient awakes considerably refreshed. Quietude and the recumbent position being strictly enjoined, with attention to the bowels and diet, usually prevent the occurrence of further mischief. If neglected, however, various diseased actions may be induced, the most frequent of which is inflammation of the breast and abscess.

The infant should also be put to the breast very early, and the accumulation of milk particularly guarded against. The secretion of milk is preceded by that of the colostrum.

The tumid and distended state of the mammary glands is sufficiently diagnostic of the cause of this febrile state. In those febrile actions which occur during the puerperal period, and which are of so formidable a character, if the breasts were once tumid they quickly become flaccid, or there may be no attempt at all to secrete milk.

DISEASES PREVENTING SUCKLING.

The duty and advantages of every woman suckling her own offspring are so manifest that it would be idle to write upon this subject. The existence, however, of certain diseases, or the presence of malformations, may preclude some females from the indulgence of this agreeable office.

Of the malformations, the most frequent is, perhaps, retraction of the nipple, or their being of so diminutive a size as to prevent the infant grasping this organ with its lips. There may be also an imperforate state of the orifices of the ducts, and, although rarely, the gland itself may not perform its function of secretion at all.

The existence of sore nipples, at any period, should not be sufficient excuse for declining to suckle, except in very severe cases, and then the medical attendant should be the judge in this matter.

Mothers should not suckle who labour under any organic disease.

Also, when the mother's health is suffering, if good

diet and tonic medicines do not quickly improve her condition, the secretion of milk must be arrested.

MORBID CONDITION OF THE MILK.

I cannot enter fully into the morbid conditions of this secretion. Suffice it to say, that it may be too serous,—that is, the nutritious portion may be deficient both in quantity and quality. It may likewise contain blood and pus, the characteristic globules of which fluids are readily discernible upon microscopic examination of the secretion. Their presence is sufficient reason to suspend lactation.

For an interesting paper on the mammary secretion and its pathological changes, the reader is referred to a communication by Dr. Peddie, in the *Monthly Journal and Retrospect of the Medical Sciences*, August 1848.

DISEASES AT THE TIME OF WEANING.

The mammary glands often become immensely distended at the time of weaning, and by manipulation hard knots and lumps are discovered. So great, at times, is the accumulation of secretion that it may be necessary to relieve the parts by making use of a breast-pump. Generally, however, by giving saline purgatives, and enjoining rest, the secretion becomes gradually diminished, and, at last, entirely suspended. Inflammation and abscess very rarely take place at this time. If there be very great tension, stripes of adhesive

plaster, well adjusted, afford great relief. The axillary glands may become painful, swollen, and even advance to suppuration.

AGALACTIA.

Agalactia (ἀ, priv. γάλαξ, milk) implies the total absence of the secretion of milk.

This functional anomaly is very rare, and it is very difficult to account for its occurrence when the mammary gland is fully formed. However, such cases do occur.

In some women the gland is so little developed that neither during pregnancy nor after parturition does any increase take place, and with them milk is not secreted.

I know the case of a young woman who has given birth to several children, and never had any breasts, nor the slightest secretion of milk.

When a gland exists, and the milk does not become secreted, the child should be placed to the breast, and warmth applied to the mammæ. In the absence of a gland nothing can be done.

GALACTORRHŒA.

An excessive secretion of milk whilst suckling, or a continuance of its formation after weaning, is a complaint with which the surgeon occasionally meets. It occurs in hysterical females of weak power. The

continued secretion of milk after weaning the child has been known to last as long as five years. Montgomery mentions a case in which this circumstance caused much annoyance for three years, and, even at the end of five, milk could be expressed from the nipples.

This continued secretion is generally associated with some disturbance of the uterine functions; with, for example, great irregularity or deficiency of the catamenia, or with complete amenorrhœa. At the same time the general health is more or less deranged. It seems, also, to ensue, in rare cases, after extending the period of suckling beyond a proper time.

Treatment.—Diaphoretics, aperients, rest, tonics, cold applications, and measures calculated to improve the state of the uterine secretions, are the therapeutical means to be adopted in the alleviation of this complaint. Iodine is said to be given with very great benefit in these cases.

Dr. Laycock recommends hemlock poultices, and pills composed of opium and hemlock, in these cases, especially if there exist simultaneously any neuralgic affection. Tannic acid may be advantageously administered.

CASE LXXXVI.—DIMINISHED SECRETION OF MILK UNDER THE
INTERNAL EXHIBITION OF THE IODIDE OF POTASSIUM.

Dr. Sperino relates, in the "*Giornale della Scienze Mediche*," for May 1842, the case of a woman who suckled

her infant, and with whom, under the influence of the iodide of potassium, the secretion of milk was diminished to such a degree that the medicine was obliged to be abandoned.—Cullerier, *Mém. de la Société de Chirurgie de Paris*, t. i. p. 18.

CASE LXXXVII.—GALACTORRHŒA CURED BY IODINE AND IODIDE OF POTASSIUM, BY DR. RIESEMBERG, OF CAROLATH.

In the "*Journal de Chirurgie*," January 1844, the following very curious observation of the cure of a galactorrhœa by iodine is related by Dr. Riesenbergs of Carolath.

A woman of 30 years old was confined with an infant which she began to suckle, but which she was obliged to wean on account of the difficulty it had in taking the breast. The secretion of milk did not continue the less for it, and only ceased, at the end of six weeks, with the first menstrual period. Two years after, she was pregnant for the second time, in the course of which they tried to elongate the nipple; they succeeded upon one side only, so as to allow the infant to suck. But a continual flowing of milk was soon established on both sides, so abundantly that the clothes were constantly soaked with it. A slight compression was exercised upon the breasts, in the hope of pressing the galactophorous ducts, but without success. The sulphate of potash, diaphoretics, blisters to the arm, cold applications to the breasts, astringents both external and internal, and tonics, were even employed, without result: the flow continued, the woman became thin, and wasted away from day to day, and began to have fever. At last, at the end of eighteen weeks, Dr. Riesenbergs had recourse to iodine, and twelve days after the galactorrhœa disappeared on the appearance of the catamenia. In all, five grains of pure iodine and one gros five grains of iodide of potassium were administered. A year afterwards, in 1841, the third accouchement took place. The infant

was not even presented to the breast. At first, the secretion of milk appeared to be dried up, but at the end of fourteen days the milk recommenced to flow with as much persistence as before, and sometimes in such quantity that the woman was obliged to empty it from her slippers, where it had accumulated; a fact of which Dr. Riesenberg was himself a witness.

Iodine was had recourse to, and the same success was soon obtained as in 1840.

This time the catamenia reappeared only seven weeks afterwards.—Cullerier, *op. cit.* p. 18.

CASE LXXXVIII.—DIMINUTION OF THE SECRETION OF MILK FROM
THE INTERNAL EXHIBITION OF PROTO-IODURET OF MERCURY.

Eugénie Mallegol, æt. 22, entered the Hospital Lourcine in October 1842, for a vaginitis with granulated ulceration of the neck of the uterus. She was pregnant. Confined at the end of November with a healthy infant, she was put, in the month of January, under the use of Iodide of Potassium: one gramme a day reduced a swelling of the ganglions of the neck, at the same time as the considerable swelling of the neck of the womb. She was subjected to this treatment six weeks without remarking the slightest change as regards her breasts; her health during these six weeks continued excellent. The 15th February, wishing to act more energetically upon the womb, which furnished a very abundant catarrh, I substituted the syrup of Proto-ioduret of Iron in place of the Iodide of Potassium. The patient began with twenty centigrammes, and successively arrived at sixty. From this moment the breast diminished in volume; but especially the secretion of milk diminished to such a degree that the infant suffered, and it was necessary to give it cows' milk. I suspended the Ioduret of Iron, and eight or ten days after the breasts afforded the same quantity of secretion,

and were of the same size, as before the 15th February.—Cullerier, *op. cit.* p. 17.

CASE LXXXIX.—SECRETION OF MILK DIMINISHED UNDER THE INTERNAL EXHIBITION OF PROTO-IODURET OF MERCURY, AFTER MERCURY.

Gabrielle Varmier, æt. 26, a labouring woman, entered the hospital of Lourcine, October 6th, 1842; she was eight months pregnant. She stated that she had been ill for one month; that an ulceration which she had upon the tongue appeared at the same time or a little after that which she had upon the vulva. This ulceration, which was situated at the extremity of the tongue, a little on the right side, was as large as a piece of 50 centimes, and presented the characteristic induration; small chancres on the large and small labia pudendi; no ganglionic enlargement. She was placed under the use of pills of proto-ioduret of mercury. At the end of a month she gave birth to a fine child. At the end of three weeks the induration existed on the tongue; some papulæ appeared on the forehead, some superficial ulcerations in the mouth and on the sides of the tongue. Six weeks after her accouchement I returned to the use of the pills of proto-ioduret of mercury, two a day of half a grain each. At the end of eight days she complained that the quantity of her milk diminished. I paid no attention at first to this circumstance, and she still continued the medicine for four or five days; but then she complained afresh, and more seriously. I suspended the pills, and after eight days the milk returned in its former abundance. Two weeks after, I returned to the use of the pills, and at the end of eight days the phenomena were produced anew. I ceased the proto-ioduret, and prescribed pills of calomel. I finished the treatment by this means, and nothing manifested itself as regards the breasts. The patient went out perfectly cured the 9th March, 1843.—Cullerier, *op. cit.* p. 15.

GALACTOCELE.

Under this term (Γάλαξ milk, Κήλη a tumor), three kinds of tumors formed by effused milk may be noticed.

1. A cyst containing a large quantity of normal milk.
2. Milk effused throughout the gland in the interlobular cellular tissue.
3. Cysts containing the more solid portions of the milk, the serum having become absorbed.

CLASS I.

Age.—Morbid collections of milk may form at any age during which lactation takes place.

The general health.—The health of the patient may be good, and not disturbed.

History.—The swelling usually appears a few weeks after parturition, without any appreciable cause, and it is not confined to primipara.

Size of the swelling.—Slowly increasing as suckling is continued, the tumor may attain an enormous size, so large as thirty-four inches in circumference, and requiring to be supported upon the thigh.

Patient's sensations.—The pain is very trifling.

The external appearance.—The skin over the breast is not changed in colour, but the veins may be enlarged and congested.

Manipular indications.—Fluctuation is generally very distinctly felt.

Duration.—These tumors continue, varying a little

in size, for many months, and without inflammation being excited.

Axillary glands.—Slight enlargement and swelling may be noticed in the axillary glands.

Treatment.—An opening may be made with a lancet, and the milk allowed to escape, or it may be removed with a trocar and canula.

Progress.—The discharge continues for a few days, and then ceases. This happy termination does not, however, always ensue, for acute inflammation, suppuration, and even gangrene, supervene, and sinuses sometimes form which are very difficult to heal.

Result.—In all cases a cure has been effected ; and in some the patients have subsequently suckled with the affected breast.

The contents of the cyst.—In one case ten pints of pure milk were evacuated, in other cases a less quantity. The contents of one were a white curd and a little yellow serum.

CLASS II.

M. Velpeau describes a tumor of the breast which was very sensitive for a few days. The organ was transformed into a spongy mass. A puncture was made into it, and milky fluid flowed away from, as he states, the meshes of the cellular tissue.*

CLASS III.

Age.—This variety may occur at any age after lactation has been once performed.

* M. Bérard, p. 54.

History.—Tumors of this nature are of rare occurrence. They are first perceived during suckling, sometimes when both breasts, and sometimes when one only performs its function perfectly. When from some accidental cause one breast is not used, it may become the seat of one of these tumors.

Size and situation.—The diameter of the tumor varies from one to two inches. It may be situated in the substance of the gland, or under the areola close to the nipple.

The patient's sensations.—No pain is at first felt; but after a time, when inflammation occurs, then more or less pain is experienced.

Manipular indications.—The lump is firm and moveable, rather solid, but not like an indurated portion of gland tissue. It sometimes preserves the impress made upon it with the fingers.

Duration.—The swelling may exist for some time, and at last become inflamed.

Treatment.—Opening the cyst, or removing it entire, appear to be the only means by which its removal can be effected.

Progress.—Suppuration, and afterwards adhesion, follow the incision, and the progress is usually favourable. In one case, however, a pregnant woman was the subject of an operation for the removal of one of these tumors, and she miscarried and died of peritonitis with pleuro-peripneumony of the right side, the operation having been performed upon the left mamma.

Result.—Success usually follows these operations.

Morbid anatomy.—A firm adherent cyst is found, containing soft and almost fluid matter. In some cysts the contents resemble adipocire; in others a cheesy substance is found. The walls of the cyst may be thin, and the surrounding gland tissue healthy, with or without dilated ducts.

CASES OF GALACTOCELE.

CASE XC.—Five weeks after delivery a swelling appeared in the breast, and after several days' duration it was opened, and more than a quart of good rich milk was discharged. A tent was inserted into the opening; this gave rise to great constitutional irritation, and when withdrawn foetid milk and gas escaped. It was soon cured.—South's *Chelius's Surgery*, ii. 789.

CASE XCI.—Several small milk swellings formed in a woman's breast which were punctured with a lancet. Great inflammation ensued, even gangrene and sinuses. The patient recovered, but the breast was damaged.—South, *op. cit.* p. 790.

CASE XCII.—A woman, æt. 20, of robust constitution, small stature, and with mammæ naturally voluminous, presented an enormous enlargement of the left breast. The swelling commenced ten days after the second lying-in. She continued to suckle her infant, but, the more she did so, the larger the breast became. In two months it was thirty-four inches in circumference, and rested on the left thigh. The skin was unchanged, and there was some tumefaction in the left axillary region. A trocar and canula being introduced, ten pints of pure milk were evacuated. Chemical analysis proved that it did not differ from ordinary human milk. Suppuration ensued, but at last the cavity was filled up. The patient was perfectly cured; and

on giving birth to a child two years afterwards, she suckled it without any return of the disease.—Scarpa, *Opusculi di Chirurg.* t. ii.

CASE XCIII.—A hard moveable tumor was slowly developed towards the sixth and seventh month of suckling, in the right breast. It was painless, seated beneath the nipple, and had attained, when Dupuytren saw it, the size of a hen's egg. The woman suckled her child fifteen months. The cyst was opened, suppuration took place, and after a time adhesion was induced. The contents of the cyst were slightly fluid: the cyst very adherent.—Dupuytren, cited by Bérard, p. 55; and Nélaton, p. 58.

CASE XCIV.—A woman, æt. 40, presented a rather solid tumor in the breast, which retained the impression of the finger. It was removed, and proved to be a cyst, enclosing matter like adipocire, physically and chemically.—Dupuytren; Bérard, p. 56.

CASE XCV.—M. K., æt. 35, whilst suckling perceived a tumor in the *left* breast, which after a time interfered with lactation. Twelve months after its discovery, and during the third month of pregnancy, she showed it to a surgeon. It gave her no pain at first, but five months since the part around swelled, and became painful. Under a mild antiphlogistic treatment this affection subsided, but a small tumor remained, which did not appear to be an indurated portion of the gland. Means to disperse the tumor proving ineffectual, it was removed. She bore the operation well, but in rather more than two days she miscarried, peritonitis supervened, and she died in rather more than four days. The mammary gland was very little injured. The cyst, about the size of a small walnut, contained a sort of cheesy matter.—*Sect. Cadav.*: All the evidences of

suppurative peritonitis. Acute peripneumony of *right* lung.—Lloyd, *Lancet*, xv. 394.

CASE XCVI.—A tumor, the size of an egg, was found in the mamma, immediately below the nipple, not painful nor tender, and unaccompanied by discoloration of the skin. It was extirpated, and the dissection afforded the following very interesting results:—The tumor was composed entirely of the proper mammary tissue. Around the chief cyst there were several smaller, of the size of a pea, and pointed in front towards the nipple; the point ending in a lactiferous duct. Each of the smaller cysts was filled with a substance having all the characters of butter, and the principal cyst with matter exactly resembling cream cheese. On a minute examination, no epithelial scales or cholesterine crystals were discovered, elements which are always found in meliceratous or atheromatous tumors.—Forget, *Bulletin de Thérapeutique*, xxvii. 355.

CASE XCVII.—There is a preparation in the Museum of Guy's Hospital, described as follows:—"Breast; removed from a middle-aged female, for a tumor, containing cheesy matter, occasioned by obstruction of a lactiferous tube."

The tissue of the gland appears quite healthy, and intermingled with it is much fat. The tubes of the gland generally appear dilated, and pieces of glass rod are placed therein. A thin translucent membranous expansion exhibits the boundary of the cyst, but all the contents have been removed. There is no duct at present traceable to this cyst.

SECRETION OF MILK AT EXTRAORDINARY PERIODS OF LIFE.

Baudelocque mentions the case of a girl of eight

years of age whose breasts secreted milk in consequence of having applied an infant to her breast.—*Art d'Accouchement*, t. i. p. 188.

There are also cases upon record of women who are said to have never been pregnant suckling children; and one or two instances in which the secretion of milk has been induced in the later periods of life in women who have not been pregnant for many years.

CASE XCVIII.—MILK SECRETED TWELVE MONTHS AFTER WEANING.

Heister relates the case of a woman who was brought before a tribunal of justice on suspicion of having murdered her child, because there was milk in her breasts twelve months after having weaned her first child. She persisted in her innocence, and Heister being asked his opinion, he said that "nothing could be determined with certainty; for it frequently happened in unmarried and married women, nay sometimes in old women; and, what was more remarkable, milk had been frequently observed in the breasts of men and children; and this, therefore, might happen to this woman, without her being pregnant, particularly as her menses had been obstructed the whole time."—*Obs. cclxxiii.* p. 325.

For other cases see "*The London Journal of Medicine*," i. 85.

And the case of a woman, æt. 61, who suckled her grand-child, eighteen years after the birth of her own youngest child.—Braithwaite's *Retrospect*, xviii. 376.

FLUID CONTAINING UREA FLOWING FROM THE
NIPPLES.

There appear to be well authenticated cases in which

a fluid, as well as milk containing urea in excess, passed from the nipples, in consequence of more or less obstruction to the passage of the urine along its natural channels.*

MORBID SYMPATHIES OF THE MAMMARY WITH PAROTID GLANDS.

The mammary glands are said to sympathize with that affection of the parotid gland termed *cynanche parotidea*.

I have never witnessed a case of this kind, but I learn, from good authority, that, although the affection is very slight, there can be no doubt whatever of its occasional occurrence.

No ill effects follow, and the pain and tension of the breasts which usually commence as the affection of the parotid is passing off, quickly subside.

It is said that the organs sometimes diminish in size after mumps.

ABSENCE OF, AND SUPERNUMERARY NIPPLES.

Each gland is supplied with one nipple, deviations from which are rare.

I have never seen a case in which the nipple and areola were so absolutely deficient as not to be traceable, although the nipple is frequently so much

* Arnold, *Journ. Univers. des Sc.*, quoted in *Lancet*, xvi. 453; *Trans. Coll. Phys., Philadelphia*, i.; *Allg. Med. Annal.*, Jan. 1815; *Journ. de Med.*, quoted in *American Journ. of Med. Sciences*, No. iv. 412; and *Guy's Hospital Reports*, New Series, I. 289.

retracted, or is so diminutive and badly developed, as to be incapable of answering the ends for which it is intended. There is generally a trace, at least, of this organ to be detected.

AMASTIA (*ἀ* priv., and *μαστός* a teat) is a suitable term to express this condition.

PLEIOMASTIA, (*πλεῖον* and *μαστός*). There are examples, however, of the existence of supernumerary nipples; and this anomaly occurs as follows,—viz. two upon each breast, or two or more upon either the right or the left. They may be situated near together, and possess an areola in common, or they may be separated and encircled by an areola distinctly defined. The milk flows as freely from the supernumerary as from the normal nipple.

As many as five, and each with its areola, have been seen upon one breast. (G. Hannæus, Dict. de Sc. Méd., art. Mamelles.)

INCONTINENCE OF MILK.

The retentive power of the mouths of the ducts on the nipple is sometimes so greatly diminished as to permit the milk when formed to flow away continually. Since, as I have shown in another place (page 34), the yellow elastic tissue forms the chief uniting medium in this organ, a want of it, or a loss of tone in its fibre, may be the reason why this accident occurs.

Astringent lotions, or even cold, which is known to

act so powerfully on the yellow fibre element, might probably be used with advantage.

COLOUR OF THE NIPPLE AND AREOLA, AND ITS CHANGES.

The colour of the nipple and areola depends upon the development beneath the cuticle of nucleated cells containing pigment granules. The colour of these parts in the virgin is of a rosy hue, of a more deep or lighter tint according to the general complexion of the individual.

Changes of colour often occur before the catamenial periods, but during the first pregnancy the intensity of the colour is generally a well-marked feature of uterogestation. The colour may, indeed, become so intense as to be almost black, both during the catamenial period, as well as during pregnancy.

Also, a patchy appearance may be produced from deficiency in one part, and development in another, of pigment cells.

The colour of the nipple and areola becomes changed, when certain conditions of the ovaries and uterus exist without pregnancy.

DEVIATIONS FROM THE NORMAL CONDITION OF THE NIPPLE AND AREOLA.

I have, when on the subject Amastia, alluded to the absence of this organ, and in another place, page 29,

to those inflammatory affections to which it is liable. There are, however, certain conditions of the part which demand further observations.

RETRACTION OF THE NIPPLE.

This is a state of the organ which engenders so much distress and misery, that too much attention cannot be given to remedy, if possible, such a condition of the part. With this view, some attempts should be made during the latter months of pregnancy to effect so desirable a change. Usually neglected until the time of parturition, it then becomes a matter of great anxiety and difficulty; for the highly excited state of the gland renders every attempt to suck abortive. The medical attendant should make inquiry concerning the condition of the nipples when first called to primiparæ, and give proper directions, if they appear imperfectly developed.

All pressure upon the part must be carefully avoided, and the evolution of the nipple may be assisted by using an apparatus made expressly for the purpose. An older child may likewise be put to suck the breast, if the infant of the patient is not sufficiently strong, and the subject has been neglected until after child-birth.

CASE XCIX.—PEDUNCULATED BODY GROWING FROM THE NIPPLE.

My friend Mr. Curling gave me a curious growth, which he had removed from the nipple of an elderly woman. It was attached very near to the apex, and by a very small peduncle. It

was of a somewhat flattened, quadrilateral, and lobulated figure, of the colour of the skin, and pendulous. The woman had never experienced any pain in the part, and it had been growing many years. It measured about one inch by one inch and a half square, and was about half an inch thick. Its structure was fibrous, rather succulent, as if cedematous, and was clearly of the same nature as those small pedunculated cutaneous growths met with in various parts of the body.

MORBID STATES OF THE LARGE AREOLA GLANDS.

Small glands are dispersed beneath the cuticle of the areola. They become gradually enlarged during the time of pregnancy. From the orifices of their ducts a sebaceous matter may be expressed.

There are some vague statements of milk being secreted by these glands; which I leave, however, as such a thing is improbable.

If obstruction of the orifice of the duct of one of these glands takes place, the secretion may collect, and thus form, by degrees, a small tumor, of which one case is related by M. Lebert. At least it seems to me to be the probable origin of the tumor described by him.

CASE C.—A woman had felt a large tumor in the breast for thirty-eight years. It appeared after a severe contusion of this region. It prevented suckling. Deeply seated in the breast, it felt pasty, like dough. Very little pain had been experienced. When removed, and the cyst, which thick, was cut open, it was found to contain matter like bran mixed with hair. It weighed,

when removed, eight ounces. — Russell, *Philos. Trans.*, No. 337, p. 276, Abridgment, v. 218.

CASE CI.—Professor Dieffenbach removed a tumor from the breast of a young woman which had all the characters of the common cutaneous encysted tumor, and which originated in the obstruction of one of the ducts of the cutaneous glands. The seat of this morbid development was the skin covering the mammary gland near the nipple. It was equal in size to a small hazel-nut; of an almost spherical figure; the colour dull white, and of a satin-like brilliancy. The tumor consisted throughout its entire thickness of concentric layers, the arrangement resembling that of the bulbs of the onion or lily, having a yellowish white, striated appearance, like mother-of-pearl. All these laminæ consisted of membranous epidermic scales, placed one upon the other, which were in an almost dry state, particularly towards the centre, and without nuclei. Between these layers, a tolerable quantity of finely granular fat, and a large quantity of cholesterine crystals, were arranged in groups; to which is probably to be ascribed the mother-of-pearl-like appearance. Dr. Ribbentropp, who also examined the tumor, showed M. Lebert, on the surface, an opening which the former supposed to be the mouth of the excretory duct. No proper cavity was detected, as the concentric layers continued into the centre of the growth.—Lebert, *Abhandlungen aus dem Gebiete d. Prakt. Chirurgie*, Berlin, 1848, s. 104.

DISEASES DEPENDING UPON CARCINOMATOUS DEGENERATION OF THE MAMMARY GLANDS.

I have now to commence the description of those diseases with which, unhappily, the mammary gland is

so frequently attacked, and to check the progress of which has, unfortunately, baffled the skill of surgeons in all ages.

Hence, the term "malignant" has been applied to these tumors,—an appellation, in all probability, derived from the frightful aspect of the ulcers and wounds which ensue when the disease has made considerable progress, as well as from the destructive influence exerted upon the whole constitution of the individual so afflicted.

It would be perfectly impossible to include within the limits of this essay a full and complete anatomical and physiological history of the carcinomatous growths. To a subject of such paramount importance and interest a separate treatise should be devoted.

I propose, therefore, in the following pages, to consider the various forms of this disease with which the surgeon meets in the breast; and, after pointing out a few of the anatomical differences, to state what appears to be the most appropriate plan of treatment to be adopted in particular instances.

The word carcinoma is used to express that form of new growth identical with which there is no tissue in the body, and which, after arriving at a certain stage of development, gives rise to an ulcer, which gradually extends, destroying the surrounding parts.

The use of the word, so commonly applied to these tumors, "scirrhus," I have intentionally avoided, because the meaning is so very indefinite. Any hardness or hard tumor was formerly called *σκίρρωδης*, "Scirr-

hous" by the older morbid anatomists, derived from *σκήρος*, a piece of marble.

THE IDENTITY AND IDENTIFICATION OF CARCINOMA.

Of the identity of the genus Carcinoma there can be no doubt, although the varieties in form presented by it to the eye would perhaps lead to an opposite conclusion. But do not these varieties depend upon constitutional peculiarities,—upon the structure of the tissue by which the morbid growth is surrounded,—upon the stage of the disorder,—and upon other sources whence modifying circumstances may spring?

As regards the identification of carcinoma, or of a tumor formed of a tissue in every respect identical with that surrounding the form of ulceration termed "cancer," it does not appear to me that any doubt need exist upon the point.

The minute anatomy of carcinoma is so distinct and peculiar, so totally different in almost every respect from that of any other tissue in the body, and the elements of which this tissue is composed are so characteristic, that the identification of a growth of this nature no longer remains a matter of uncertainty or of doubt.

But it does remain to be proved that all growths thus identical in structure present the same physiological phenomena: that, in fact, the existence of a single carcinomatous growth is only premonitory and significant of that peculiar diathesis which, sooner or later, by giving rise to the development of similar

growths in other parts of the body, necessarily produces a fatal termination.

THE MODE OF DEVELOPMENT OF CARCINOMA.

Carcinoma is developed in various shapes in the female breast, and these are the varieties with which the surgeon meets :—

1. Lobular carcinoma ; attached to or involving only one lobe.
2. Intra-glandular carcinoma, infiltrating the entire gland.
3. Encysted carcinoma, generally *Carcinoma medullare*.
4. Carcinoma of the nipple.
5. Carcinoma commencing in the skin, either of the nipple, areola, or over the gland.

The new growth which presents itself may offer many varieties as regards its physical properties. Whilst yet small, and not sufficiently large to elevate the skin, manipulation alone must suffice to indicate its nature. The stony hardness of one form is said to characterise the *Carcinoma fibrosum* ; a soft, somewhat elastic sensation, the *Carcinoma medullare* ; and from these two varieties others are formed as the disease advances.

The great variety in the features presented by carcinoma depends upon the more or less rapid development of its peculiar elements, as well as upon the tissues to which the growth is confined.

It must be admitted that there is a moment in every case of carcinoma of the breast when the growth is so small as to elude detection, and it has usually attained, perhaps, half an inch in diameter, or even more, before the patient herself becomes conscious of its existence.

To the touch this lump feels hard : it may or may not be within the glandular tissue, and it is perfectly moveable beneath the skin, and upon the subjacent tissues.

The patient does not complain of any ailment whatever, and the lump may have been discovered quite accidentally, not even the slightest sensation having ever directed her attention to the part.

A few weeks pass away ; the lump has become larger, lancinating pains are felt, and the integuments, if the woman is thin, are slightly elevated by the tumor. To the touch it is very hard ; its surface is very irregular. It may even appear to be scarcely connected with the gland.

At this stage, if removed, the morbid growth has a yellowish, greyish tint, and presents a sort of peduncle by which it was connected to the tissue of the gland, and radiating from the tubercle, as from a centre, fibrous lines extend between the masses of sub-cutaneous adipose tissue towards the skin. A speckled appearance may also be visible in the centre—the remains of the ducts of the infiltrated gland tissue.

The tubercle is developed within the substance of the gland, and none of the radiating fibrous lines are seen, but it is ultimately blended with the gland tissue.

After a few months the tumor becomes more painful ; it has increased in size, and is now adherent to the cutis, which is, perhaps, slightly puckered in. The whole tumor and skin move together with that part of the breast to which it is attached. When removed, and a section made of a tumor in this stage, the appearance represented in Plate IX. fig. 1, will be noticed.

The subcutaneous adipose tissue has very nearly disappeared ; in one point there is no defined line between the skin and the disease, and right and left of this the cutis is several times thicker than that of the healthy part, and infiltrated with the peculiar fluid of carcinoma.

Supposing, however, that the disease is not removed, the tumor increases, the hardness of the skin becomes excessive, and in it the disease advances until nothing of the original gland can be felt. The integuments of the breast appear to be converted into a hard, resisting case, which scarcely admits of any impression being made upon it. The surface is rough and irregular, presenting small ridges ; the skin appears at the very extreme point of tension, and ready to burst open. In colour it is red, purplish, yellowish, and very glossy ; and the observer fears to touch, lest the pain thereby occasioned should be scarcely durable. Surprising, however, as it appears, the sufferer often permits considerable manipulation, and expresses no pain from the pressure.

The next stage is that in which the integuments slough and ulcers form ; but this takes place in a peculiar

manner. Small pustular eminences appear upon the surface; the centre of these dies, as it were, and is thrown off; several of these holes unite, and thus at last a large sloughing and ulcerating mass is formed.

Sometimes, instead of this process, the integuments appear to crack; oozing or "weeping" takes place, scabs form; they separate, others form, until, at last, a considerable portion softening down, a large and foul ulcer is the result.

At other times, when the disease has arrived at a certain point, it seems to become stationary and quiescent, even to decrease; but this cannot be regarded as a favourable sign, for generally the disease, in proportion as it appears dormant in the part primarily attacked, is generated with increased activity in another. Thus, in an instance in which a woman had been troubled with a tumor in the breast for several months, and which had not increased, and who presented evidences, before the operation, of the ravages of the disease, and whose death took place a few days after the operation, carcinoma was found in the subjacent pectoral muscle, the mediastinal glands, and liver. Here we have a case in which the force of the disease was arrested in the primary seat, but had become active in the secondary developments. And such cases are not very uncommon.

I have confined the above description to the local appearances only; but manifestations of far greater importance are discernible in the body generally, or in the neighbouring parts. In many cases, as soon as the

skin becomes implicated, or even sometimes before, but rarely, the axillary glands become affected. Pricking of the skin in the axillary region quickly increases, cedema of the arm follows, and great pain on moving the thoracic extremity, and often difficulty of breathing, succeed.

The aspect of the patient becomes of a dull, leaden hue, yellowish, pallid, and depressed; her strength fails; pains in the bowels, perhaps of a very severe kind, are experienced; and, without much annoyance or pain from the cancer in the breast, death terminates the sufferings of the patient by an attack of some ordinary complaint. Upon examination, carcinoma may be found in the lungs, liver, peritoneum, and in the bowels, —in fact, universally.

Such is a brief history of an ordinary case of *carcinoma fibrosum* when allowed to pursue its natural course.

Great variety occurs as regards particular circumstances; and these will now be noticed under the same arrangement as before.

Age.—The earliest age at which I find cancer has been developed in the mammary region, was eight years. Before thirty-eight years of age it is a comparatively rare form of disease of the breast. From this age to fifty-one it is very common. These statements are made from a comparison of the ages of 147 cases, whose ages varied between eight and ninety-three years. Between thirty-nine and fifty inclusive,

70 cases appear; and of these, 33 were seen between the thirty-ninth and forty-fourth years inclusive, and 37 between the forty-fifth and fiftieth years inclusive. So that, if we may judge from 147 cases, between forty-five and fifty years, inclusive, is the age when cancer of the mamma becomes most frequently developed. If, again, we divide 100 years into decades, we see by the Table that the fifth is the one in which carcinoma is the most frequently developed; the fourth next in frequency, and the sixth next to that.

Table to show the age at which cancer most frequently attacks the female breast*,—compiled from the notes of 147 cases :—

From 1	to 10	years	...	...	...	1 case.
— 10	— 20	—	...	...	...	3 cases
— 20	— 30	—	...	...	...	11
— 30	— 40	—	...	...	...	32
— 40	— 50	—	...	...	...	51
— 50	— 60	—	...	...	...	29
— 60	— 70	—	...	...	...	10
— 70	— 80	—	...	...	...	2
— 80	— 90	—	...	...	...	7
— 90	— 100	—	...	...	...	1

Total 147

* It appears by a table drawn up by M. Lebert, which I presume refers to cancer occurring in any part of the body, that in 91 cases the largest number of instances were observed between the ages of fifty and sixty, namely, 29; and between forty and fifty, 20 cases.—*Abhandlungen, &c.* s. 336.

From an analysis of 120 cases of cancer of the uterus, by Dr. Lever, it "appears that the period of life most obnoxious to this

Social condition.—Of 116 cases, 79 were *married* women, and 37 were single. Of 55 married women, 47 were *prolific*, many of them having borne several children, and only 8 were sterile.*

Of 116 cases—				Of 55 married women—			
Married women	...	...	79	Prolific	...	...	47
Single	...	...	27	Sterile	...	...	8
<hr/>				<hr/>			
116				55			

State of the general health prior to attack.—As regards the general health of women in whom carcinoma becomes developed it is rather difficult to offer any decided statement, as well as to denote with precision the diathesis or temperament which is most liable to that form of cachexia favouring the growth of cancer.

It is very remarkable, that the majority of women labouring under carcinoma, when questioned regarding their health, reply that they have uniformly enjoyed very good health. When asked if they have had much trouble and grief, they often say that they have; and every surgeon knows that these mental emotions impair the functions of nutrition, and, in this way, may

disease is from the fortieth to the fiftieth year."—Med. Chir. Trans. xxii. 269.

* "Single women bear a proportion of 5.83 per cent., married women 86.6, per cent. and widows 7.5 per cent.; affording a complete refutation of the statement that celibacy favours the development of the disease."—Dr. Lever's Statistical Notices of 120 Cases of Carc. Uteri. —Med. Chir. Trans. xxii. 269-70.

give rise to the development of morbid growths. But, on the other hand, many women, who have not a want, a care, a thought but of enjoyment, are attacked with this fearful disorder; and it is only within the last few months that I saw one of the worst forms of cancer in a lady who knew no grief but in her disease, and wanted no enjoyment but that of which she was deprived by the existence of the malady.

Diathesis and temperament.—Individuals of a strumous diathesis are most liable to cancer,—that is, I believe that in them cacoplastic deposits are more readily developed, and hence their more frequent occurrence. But it is quite impossible to state, with any degree of accuracy, what appearance of the woman betokens a liability to the complaint. Dark and fair,—florid and pallid,—the corpulent and the thin,—the apparently healthy and the decidedly unhealthy, all present instances equally severe, and alike uncontrollable.

Who, then, are exempt? In the present state of science—the truth must be told—the surgeon cannot say!

On the aspect of the patient, as a means of diagnosis.—A general appearance of defective nutrition, which may be manifested in various ways, is commonly noticed in patients labouring under cancer. Yet, every now and then, women whose “*embonpoint*” betokens what is termed robust health, offer instances opposed to the statement that there is a uniform cachectic aspect with cancer. I have seen a woman present a tumor in the

mamma whose health had always been good, and whose appearance did not belie her statement. I have seen the same individual in a month or two, and then the ravages of the disease were strongly marked. So that I incline to the opinion that there exist, in almost all cases, after the disease has existed some time, unequivocal diagnostic signs in the appearance of individuals afflicted with a carcinomatous tumor. If it be true that carcinoma is a local manifestation of a constitutional dyscrasia, it is highly probable that the aspect of the patient should be characteristic. The evidences of defective nutrition are equally well marked in the excessively fat or remarkably lean,—in the rachitic woman of short stature, as well as in the delicate, tall and slender person. It is, therefore, from evidence of this nature, that I should judge of the constitutional nutrition of individuals.

“ Look on me ; there is an order
Of mortals on the earth, who do become
Old in their youth, and die ere middle age.”

ACCIDENTAL CIRCUMSTANCES SAID TO FAVOUR THE
DEVELOPMENT OF CANCER.

Development of cancer.—Various accidental circumstances arise in the commencement and progress of diseases of this nature, to which importance is needlessly attached.

Thus, by one, exposure to cold is said to have been the source of the mischief.

Another states that some difficulty in suckling,—as sore nipples, small nipple, and such like,—was the source of the disease.

Again, suppression of the catamenia is said to induce these morbid growths.

The escape of a sanguinolent fluid from the nipple, or even of almost pure blood, is a circumstance which occasionally happens at the commencement or during the progress of carcinoma of the breast.

SITUATION AND SIZE OF THE GROWTH.

A. *First stage.*

1. The new growth may be found in any part of the gland, or in its immediate vicinity. Although at first apparently isolated, and rolling like a stone beneath the integuments, it is almost invariably—I have never seen it otherwise—connected with the peripheral extremity of a lobe. It sometimes requires careful dissection to demonstrate this attachment.

This form I would therefore term *lobular carcinoma*, or *extra-glandular*; because, so far as can be felt, it is merely attached to a single lobe of the gland.

2. The new growth may be developed upon the surface of the gland, between it and the integuments, in the subcutaneous adipo-cellular tissue.

3. A carcinomatous growth may be *intra-glandular*: that is, developed in the very centre of the organ, surrounded upon all sides by gland tissue.

4. Immediately under the nipple and areola, as if between the ducts.

5. In some part of the integuments covering the breast or nipple.

These tumors are met with most frequently either within the gland, or upon its margins.

As the disease advances, it encroaches upon the tissues in contact with it, having in some cases more than in others a disposition to approach the skin.

When the skin becomes adherent, and therefore contaminated,—for adhesion to these growths is certain contamination,—I would determine upon this as

B. Second stage.

When the new growth has contracted adhesions with the cutis, the subcutaneous adipo-cellular tissue is no longer to be found between them, and upon making a section of the skin and tumor, the appearance, as represented in Plate IX. fig. 1, is seen.

From this point of contact the disease often extends right and left, and appears to exert all its energies and activity in extending widely in the integuments of the thoracic walls and axillary cavity; the appearances and manipular indications of which will be noticed in their proper order.

C. Third stage.

As soon as the development sensibly affects the skin by producing a hardness, and in consequence of inter-

stitial deposit an increased thickness of the cutis, I consider the third stage to be established.

The cutis is not always elevated by this deposit ; but, on the contrary, it may be depressed below the surrounding parts.

D. *Fourth stage.*

The situation of the new growth is now no longer a matter for consideration : having extended into the integuments, the farther stages will be better described under other divisions of the subject. At this time adhesions form between the tumor and the thoracic parietes.

Size.—As regards the size of the growth little need be said. When first felt, it is usually about the size of a filbert, and from this it extends until the entire half of the antero-lateral thoracic parietes, and the soft parts covering them, are involved in one diseased mass.

The whole gland may be changed into a carcinomatous mass before the skin is affected. Sometimes the gland and skin appear to be affected almost simultaneously.

The patient's sensations.—In the first stage, the patient complains of no pain whatever, and even manipulation, if not violent, is scarcely noticed.

When, however, the tumor approaches the skin, or if it be developed in the neighbourhood of some of the minute branches of the intercostal nerves, as it increases in size, pain is experienced. It is described to be of a

lancinating character, as if pointed instruments were thrust into the breast; and these may extend beyond the limits of the gland. I believe, if carefully examined, the degree of pain will be found to depend very much upon the anatomical relations of the growth to the course of the nervous filaments which are passing to the gland. If these become stretched and irritated, pain is experienced; for the new growth itself is not, certainly, supplied with nerves. It does not present any system of innervation of its own; but the nerves of the part in which it is developed becoming implicated and compressed, cause pain. It occasionally happens, indeed, that the pains are referred to some point perhaps distant from the tumor; but the anatomist will trace the cause of this in the fact of the trunk of the nerve being irritated, while the pain is referred to its sentient extremities.

Again, I have noticed that the pain is often complained of most when the skin is first becoming implicated; and that, just in proportion as the skin becomes rigid and horny, so the pain subsides. This, I presume, depends upon the destruction of the nervous tubules by pressure, and their loss of nutrition; in the same manner as the ducts of the gland tissue are slowly compressed, and at last destroyed.

The degree of pain, however, complained of varies very remarkably, and often appears scarcely commensurate with the extent of the disease. In some cases it is inexpressibly severe.

THE EXTERNAL APPEARANCE.

A. *First stage.*

When the integuments are very moveable over the tumor, there is, perhaps, nothing at all remarkable, especially if the woman be stout, and possess an adipose condition of the mamma. If the contrary, a slight elevation of the skin may be perceptible. Even considerable injection of the cutaneous tissues may exist in this stage.

B. *Second stage.*

The first indication of adhesion between the skin and tumor is not visible ; but so soon as deposit takes place within the fibrous texture of the cutis, a slight puckering of the surface appears. This is made more distinct by pressing the skin with the fingers from all points around towards the tumor, when a distinct hollow or depression is the result. This effect is never produced unless the integuments and the tumor are adherent.

C. *Third stage.*

The external appearances now assume the marked characters of cancer. In some cases an oozing takes place from the surface of the cutis ; this, drying, forms a scab ; in others a kind of fissure appears, sometimes with, often without, redness. At last a redness surrounds the scab, an increased discharge takes place, and perhaps the surface begins to be excoriated.

D. Fourth stage.

This is the stage of necrosis. The preceding were those of development. Not that, however, as soon as necrosis commences, development is arrested; but, having arrived at a certain size, the tissue or elements of the tissue die, decompose, and fall off. The parts now present those frightful, gaping, eroding ulcers which, with elevated, everted edges, and with deeply excavated irregular surfaces, pouring out an offensive ichor, gradually and slowly advance, often uncontrolled and apparently uncontrollable, until death terminates the sufferings of the patient. The quantity of discharge varies in different cases. It is usually thin, bloody, and what is termed "ichor," and is apparently composed of the *débris* of the necrosed tissue, to which is added serum, serous fluid, and blood.

Another mode in which the disease advances is by giving rise to small pustular elevations of the cuticle, which at last dry up, and form small round scabs, which separate, and then, several of these uniting together, form one extensive sloughing ulcer.

Retraction of the nipple.—This is a condition entirely dependent upon accidental circumstances.

Its indications are as follows:—

1. That the growth is so situated as to act mechanically upon the ducts, and thus, by extending them laterally, draw inward the part to which their open extremity is attached.
2. That the new growth has elevated the skin around the nipple.

3. That the new growth has infiltrated the skin, and thus formed an elevation around the nipple which maintains its usual relations.

4. Some congenital defect may influence the shape of the organ.

Manipular indications.—"As hard as a stone!" is often the first expression of one who feels a *carcinoma fibrosum* in the mamma. And, in the early state of the disease, this is its marked character.

A. *First stage.*

A small oval or round lump is felt, which moves about readily, although a prolongation may be traced from it to the breast, or the breast and lump move together. It may be slightly irregular upon its surface. Its degree of mobility should be tested with the arm, both in an elevated and again in a pendant position; for by this means alone can its attachment to, or freedom from, the pectoral muscle be correctly diagnosed.

B. *Second stage.*

The connection between the tumor and the skin may be felt at this period, and the superjacent skin feels flat and rigid. As the growth infiltrates the skin, a rather elevated or thickened edge may sometimes be felt.

C. *Third stage.*

The tumor will now be felt considerably increased in size; but during this stage it may entirely escape detection. The superjacent integuments become hard, like

a layer of horn ; as the hand is passed over the part, a sensation as if small shot were interposed beneath the cuticle and cutis is experienced, and the keratose covering of the mamma in some cases feels as if it might be elevated. A distinct hardness may also be traced in the direction of the axilla.

Manipulation aids us but little in the further stages of the disease, except as regards softening.

One or both breasts.—It is very rare to find the disease commencing in both breasts at the same moment, and I know of only one instance in support of the fact.

Of 123 cases, the right breast was affected in 68, and the left in 55 ; but as the numbers approach each other so closely, they do not appear to be available in any practical point of view.

Of 140 cases, both the breasts became diseased in 17 ; and in these 17 cases the *right* gland was first attacked in 8, the *left* in 4 instances ; in the remaining 5 cases it is not stated which gland was first affected.

DURATION OF THE DISEASE—ITS PROGRESS—AND IMPLICATION OF THE SURROUNDING PARTS.

Any attempt to fix upon the duration of a disease of this variable nature, so far as its progress is concerned, would only prove abortive. Nevertheless, it becomes a matter of great importance, in a practical point of view, to be able to judge in which cases a rapid, and in which cases a slow progress of the complaint may be anticipated.

So great is the variability as to the duration of the disease, or its mere existence, as it were, in the gland or neighbourhood, that Sir A. Cooper, Sir B. Brodie, and others, testify to its existence for many years.

From 10 to 15 years, Brodie.			
For	17	"	Cooper.
"	22	"	"
"	24	"	"
"	25	"	Brodie.
"	many	"	Lebert.

Doubtless, however, such cases are quite exceptional; for these six appear among more than 250 collected from various sources.

It is also very difficult to assign any precise period for the fatal result. I have found three cases in which death took place in about four months after the first appearance of the tumor in the breast; the cause of death being a rapid extension of the disease.

The above periods being taken as the extremes, I believe (when no operation is performed) the average duration of life after the development of the disease to be between two and four years.

Of the axillary lymphatic glands.—One of the characteristics of carcinoma is said to be the power which it enjoys of contaminating, not only all tissues in immediate contact, but the glands of the lymphatic system. How this is effected yet remains to be demonstrated. We know the fact, but its explanation is a desideratum.

The morbid state of the axillary lymphatic glands,

however, is a condition of the highest importance, and one to which I must devote some attention. It is by manipulation in the first instance that their morbid state is to be detected ; and there appear to be two varieties. One, in which they feel very hard without increase of size ; a second, in which they are softer with enlargement. I do not assert that there is any physiological difference ; it may only be gradational.

I believe, however, that other signs are more significant than enlargement of the axillary glands, particularly as their implication is most commonly attended with very severe symptoms.

I have purposely omitted to state in previous sections, when describing the other diseases to which the mammary gland is liable, that the axillary glands are not implicated in all of these, and that when enlarged it is in consequence of irritation only. They are temporarily affected, not organically diseased.

It appears that in the majority of cases the affection of the axillary lymphatic glands is contemporaneous with the implication of the skin during the second stage of development ; for of 64 cases in which axillary enlargement occurred, in one only the skin was not affected ; in 29 the skin was involved in the diseased mass ; in 11 ulceration was commencing, and in 23 ulceration was established.

I have had an excellent opportunity of demonstrating the manner in which small carcinomatous tubercles are developed in the course of the lymphatic ducts.

The subject was an elderly woman, in whose breast

was a very hard and chronic carcinomatous growth. In its neighbourhood were several small oval tubercles; and upon dissecting the lymphatics on the posterior surface of the pectoralis major muscle, the minute tubercles were seen at distances from each other along these vessels. This preparation is in the Museum of Guy's Hospital.

The principal trunk of the lymphatic system may likewise be the seat of morbid actions.

Of the constitutional sympathies.—There is no consideration, in regard to the diagnosis and treatment of carcinoma of the breast, of such paramount importance as the discovery of the constitutional sympathy with the local manifestation.

I must now state, as briefly as possible, the changes exhibited by the system generally during the various stages of the local development.

A. *During the first stage.*

I have already said that patients often state that they have not experienced any deviation whatever from their usual good health previous to the discovery of the "lump." If this be discovered about the age of the cessation of the catamenia, it is highly probable that some general *malaise*, if nothing worse, has been experienced. However, during the first stage, in the majority of cases, very slight changes are noticed in the general health; although it must be remembered that these changes follow much in the same order as the development of the disease.

B. During the second and third stages.

It is during the second and the succeeding stage that the patient begins to feel ill. Her appetite becomes capricious: she attributes this, perhaps, to pain, as well as to the passing of restless or sleepless nights. She is not so active or lively as usual, and this is attributed to the existence of the tumor, simply as a local complaint, upon which her mind constantly dwells. She suffers from nausea of a morning, and perhaps the bowels are constipated.

C. During the third and fourth stages.

Increased suffering commences with the termination of the third stage, and during the fourth all the symptoms of the complaint are intensely aggravated. The arm of the same side as the affected breast begins to swell, and the pain on moving it becomes very severe. An œdematous state of the cellular tissue of the upper extremities now commences. The respiratory functions are often laborious, and the sufferer complains of pains in the side. Very often, constant sickness arises, so that no sustenance can be retained.

Racking pains are felt, and referred to some part of the osseous system,—the spine, or arms, or thigh-bones. During these later constitutional affections jaundice may appear, or great difficulty be found in procuring evacuations from the bowels.

It occasionally happens that, in proportion as the severity of the constitutional disease advances, the local

disease assumes a more benignant aspect, and the ulcer will sometimes nearly close, or even become cicatrized : and it is in such cases that a cure is said to have been effected. But the relief afforded has not been permanent.

Placing confidence in the local appearances only, is almost sure to lead to error in diagnosis, and thence to improper treatment ; and it is only upon carefully comparing the constitutional nutrition of the patient with the stage of the local disease, that a judicious treatment can be pursued.

*Treatment.—Mode of performing the operations.—*The treatment of carcinoma has always been a subject of extreme difficulty, and, alas ! still remains a problem for the solution of which there do not yet exist sufficient data.

So far as the administration of drugs are advantageous in the restoration of the general health, there can be no doubt of their utility : but it must be confessed that, at present, no method is known by which the disease can be eradicated if there be evidence of the constitution having become affected.

Since, however, this disease occurs, primarily, in the breast, and therefore in a part of such easy access for surgical interference, it becomes a subject for consideration at what stage the tumor can be removed with the best chance of success.

In the treatment of *Carcinoma mammæ* these primary objects are to be held steadily in view :—

1. The removal of the tumor.
2. The elimination of any carcinomatous cachexia from the constitution.

1. Removal of the part primarily affected.

This may be accomplished by the use of the *knife*, the *ligature*, and *escharotics*.

It would occupy too much time to give a lengthened detail of the various compositions used to destroy cancers; and which are said to have been successfully applied in cancer of the breast. Farther than this, it would be waste of time, for this reason : no surgeon, I presume, doubts but that a carcinomatous growth may be, in many cases, successfully removed, so far as its local manifestations are concerned. But, since daily experience proves that removal of one tumor is followed by a generation of similar growths in some part or other of the body, it becomes a matter of extreme interest to know during which stage of a *carcinoma mammæ* the removal is attended with the happiest results.

There can no longer be any doubt of the possibility of the cicatrization of a large wound, when the disease is eradicated from the part by escharotics or by the efforts of nature alone. Indeed, sometimes a short time before death, when the activity of the disease in the part primarily affected is averted, the wound will partially cicatrize, and, in some instances, entirely close. But it is a matter for serious consideration whether or not the destruction by escharotics possesses any advan-

tages over excision ; the sufferings produced by their application are much more severe than those attendant upon the use of a knife. And, at present, it does not appear that any advantage is gained by their employment. If removal be the object, it may be done more quickly, and with less suffering to the patient, with a knife.

Within the last few years a plan has been introduced with the hope of improving the treatment of carcinoma. And this consists in local pressure. From personal observation, I cannot speak either as regards its advantages or disadvantages ; but this I know, that one case said to be relieved came under my notice, and the tumor was extirpated on account of its daily increase. In other cases the plan was obliged to be discontinued. And some surgeons, formerly advocates of this method, have not been, of late, so enthusiastic in its support. I have lately seen another case in which pressure produced ulceration, and greatly aggravated the sufferings of the patient. On the other hand, Mr. Bossey, of Woolwich, informed me lately that, in a case under his care, he believed pressure had arrested the progress of the tumor in the mamma, although the patient was sinking under the effects of carcinoma in some of the internal organs.

I purposely divided the progress of a carcinomatous growth into its various stages, with a view to the consideration of these points :—

1. In which stage removal of the tumor may be performed in the hope of prolonging life.

2. In which with the view of ameliorating the condition of the sufferer.

1. During the *first stage* of development of a carcinomatous tumor I believe its removal to be attended with a considerable amount of success, and this chance diminishes as the third stage is approached.

In the *third*, and especially the *fourth stage*, I believe operative interference inadmissible, at least with the view above expressed in sight,—the prolongation of life.

2. It certainly appears that in many cases the condition of the sufferer may be improved by removing an ulcerated carcinoma,—that is, that the remainder of the life of the patient may be spared much of the suffering arising from an extensive ulcerated surface. But this is presuming that the wound made during the operation heals favourably, a condition which does not always occur.

My conviction is this, that the success attendant upon the treatment of any one case of carcinoma arises from circumstances over which the surgeon has little or no control, and depends much more upon the state of the constitutional nutrition of the individual than upon the exhibition of medicines either before or after the operation.

The statistics submitted to the French Academy of Medicine by M. Leroy d'Etiolles, prove nothing as regards the advantage of delay in extirpation, because the nature of the cases is not stated. For it is quite

clear that tumors of this kind, which have existed more than five years, are of a very chronic character, and the nature of the disease very different to that which often destroys life in a few months. If these cases of acute carcinoma are meddled with, they are sure to be followed by a relapse ; if the others, almost certain freedom from the disease for some years.

As regards removal, then, we must be guided by the stage of development, as well as by the constitutional nutrition of the patient, and by the period of time the growth has been forming : and those cases are most likely to be attended with success which have passed through these stages at the slowest rate.

OPINIONS REGARDING EXCISION.

When it is determined to perform excision, the following indications, as well as the stage of the local growth, must guide us :—

1. When the disease is intra-glandular and in the first stage, the entire organ had better be removed. It is the more safe proceeding.

2. When in the same situation, and in the second or third stage, the removal of the entire gland is indispensable. In both cases a portion of the skin over the tumor should be excised, leaving sufficient to prevent tension upon the newly cicatrized parts.

3. When extra-glandular, and in the first stage, the tumor, as well as the lobe of the gland to which it is affixed, should be removed.

4. When in the same situation, but in the second or third stages, the same parts with plenty of skin must be taken away. I believe, however, it is more safe to remove the entire gland.

5. When the disease commences in, or immediately beneath, the skin, excision of the new growth must be speedily performed, and a considerable portion of the surrounding cutis be removed with it.

6. If the disease commences in the nipple, and this organ is destroyed, and there are no indications against an operation, I believe the only safe plan is the removal of the whole breast.

Of the incisions and dressings.—In all operations upon the mammary gland, for the removal of new growths, the direction of the incisions is a matter of some importance.

As a general rule, the long axis of the wound should incline as much as possible downwards and outwards when the patient is in a recumbent position.

The edges of the wound should also be adapted so as to prevent any tension upon the newly cicatrized parts.

When any tumors of an innocent nature are removed from the gland, the incision should be made in the direction of a line radiating from the nipple as from a centre, for, by so doing, a transverse division of several ducts may be avoided.

As regards dressing the wound, the edges are to be well adjusted, as much as possible by position, and which may often be accomplished by placing the arm

of the same side across the lower part of the chest. By this means very little strapping is required, for it is a great object to leave the extremities of the wound open. A bandage should never be placed *around* the chest of the patient, for it generally gives rise to much annoyance, and as evening advances requires removal. After the vessels are secured by ligature, a fold of lint wetted with cold water should be placed over the wound, and this kept cool by the application from time to time of a second piece, also wetted, which may be removed and reapplied after immersion in fresh water.

Unless secondary hæmorrhage be profuse, pressure, with cold, will generally suffice to arrest it. Very gentle and equable pressure may be kept up by a small flat sand bag placed upon the flaps. The pressure of this, while it serves to adapt the divided surfaces, at the same time restrains bleeding.

Progress after excision, and the treatment to be pursued.—In the majority of cases the wound cicatrizes well, and when this is accomplished the general health of the patient should be attended to.

Alteratives, tonics, good food, more especially of a kind of easy digestion, change of air and scene, should be recommended.

The part should be protected from pressure, and the arm of the affected side kept in as quiet a position as possible.

With every care, however, it occasionally happens that the disease returns in the wound, either before cicatrization is perfect, or, having healed, along the edges,

or in the neighbourhood of the cicatrix. The wound, previously looking healthy and healing progressively, becomes stationary, large granulations spring up, the surface of the ulcer increases, its edges become thickened, everted, or excavated, when they fall somewhat inwards. The discharge is thin and sanious, and the health of the patient declines.

If the wound has healed, the skin around the edges of the cicatrix becomes swollen, red, œdematous, or there may be the appearance as if a cyst had formed, which, when opened, discharges bloody serous fluid: the opening appears inclined to heal for a few days, at last enlarges, granulations spring up, and by no treatment can cicatrization be effected. Again, whilst the cicatrix looks healthy, the patient finds in the neighbourhood, or perhaps in a portion of the breast which was left, a small lump; of this she does not speak; at last she notices another, or perhaps a third, all betokening a return of the disease.

In these distressing cases, what is to be done?

It must be confessed that little hope remains of the prolongation of the patient's life by a second operation. In the majority of cases the disease returns a second time.

Perhaps, in this stage, escharotics may be used along the edges of the cicatrix, and occasionally benefit has resulted from their employment.

REMOVAL OF THE LYMPHATIC GLANDS SUPPOSED TO BE
INFECTED WITH CARCINOMA.

The advantage said to result from the excision of the axillary lymphatic glands, when morbidly enlarged, I believe to be as dubious as the operation is unscientific ; for if one be dissected out another comes into view ; this being removed, a third appears, and so on until the axillary vein is exposed, or perhaps incised. Very troublesome hæmorrhage is the result, and the patient left in no better position than if the glands had been left alone. My feeling is, although a solitary case may militate against the general statement, that when the disease has so far advanced as to suggest to the operator the necessity for the removal of the infected axillary glands, that no operation is admissible,—at least with the intention to prolong life.

ANATOMY OF CARCINOMA.

The unexpected length to which this essay has already extended precludes a very minute account of the structure of carcinoma. But since I have so positively asserted the specific character of carcinoma, as well as the possibility of its identification, it becomes necessary, in justification of this position, to add what I have myself observed.

The appearances observed in carcinomatous growths in the mamma are so variable, depending upon so many accidental circumstances, that it really scarcely amounts

to exaggeration to say that we rarely meet with two precisely alike. Nevertheless, they all present more or less general and characteristic features. I would refer to Plate IX. as representing good specimens of the disease. That at fig. 4 is a good example of a somewhat chronic stage of the disease; it is of a greyish yellow tint, and striæ of fibrous tissue are seen passing off between the lobes of fat. In Plate X. fig. 1, another extraglandular lobular carcinoma is shown; *a*, attached to the lobe; *b*, the fibrous bands passing from the disease to the cuticle between the lobes of fat. Another very firm, greyish, and solid growth, is seen at fig. 3, a little lobulated and with a long peduncle, by which it was attached to the breast, and in which the ducts are dilated into cells. Now from all of these a milky fluid could be expressed, of a yellowish tint, or white when free from blood globules, reddish when they were commingled.

We now pass to the minute anatomy.

The essential elements of carcinoma are nucleated globules and a fibre. In Plate X. fig. 1, *a*, is represented a lobular carcinoma. In fig. 2, a portion of one of the septa is magnified, and the minute collections of nucleated bodies are seen between the elements of the uniting or areolar tissue. A very thin section of the tumor was made, and in fig. 2 the minute deposits of nucleated globules were seen between the elements of the fibre tissue, and extending, too, between the lobes of the adipose tissue. This is the mode in which the disease extends to the cutis.

I could have multiplied these observations to almost any extent, for there is no difficulty in displaying these structures.

This, then, I believe to be the minute structure of *Carcinoma fibrosum*, namely,—

The development of nucleated bodies between the elements (that is, between the fibres) of the uniting or areolar tissue.

Now, in proportion as the fibre tissue predominates or is deficient, so is the new growth firm or soft.

In tumors of this class two kinds are met with,—one in which the minute bodies, “nuclei,” predominate; the other in which the “nucleated globules or cells” seem to constitute the chief material between the fibres.

The *Carcinoma fibrosum* presents a large quantity of fibre tissue, with a preponderance of nucleated globules.

The *Carcinoma medullare* presents a very small quantity of fibre tissue, with a preponderance of the nuclei.

Every gradation, from firmness and almost hardness to softness, nay, nearly to a fluid, is observable between these two varieties; and in the same tumor they may exist together.

Still more remarkable is the convoluted appearance of the ducts, which is met with when the disease is near the nipple. This formation appears to depend upon their becoming obstructed by and partially involved in the new growth, and the collection of a secre-

tion within the tubes. This secretion consists of fat or oil globules of every variety of size, and epithelium scales.

ACCIDENTAL ELEMENTS AND TISSUES MET WITH IN
CARCINOMATOUS GROWTHS.

1. *Fat or oil globules*.—In all carcinomatous growths this substance is found in great abundance. From the most minute point to collections of considerable size, it often interferes with correct observation. The very minute molecular bodies, often seen in active movement, are, it is said, of an oily nature. By some observers, however, this is doubted. Very often, also, the large dark masses, the compound bodies of some authors, consist of aggregations of minute points of oil.

2. *Caudate bodies*.—I believe that these structures are accidentally met with in the carcinomatous growths; that is, they are not *essential* elements.

3. *Crystals*.—Structures of a crystalline appearance are sometimes met with, especially cholesterine lamellæ.

4. *Dead matter*.—In larger or smaller quantities, the nucleated bodies in a state of necrosis, presenting a dark irregular outline, with adherent particles of fat.

5. *Capillary vessels* are often seen ramifying through the new growth, but they vary so greatly in numbers that often the tumor scarcely appears to be supplied with them.

6. Sometimes the *epithelial scales* of the mammary

gland tissue, and the remains of the ducts and their secretion, may be detected.

All the above structures are only visible to the assisted eye; but the observer may notice without assistance other appearances which are of accidental occurrence.

1. *Cysts*.—Small cavities, filled with serous fluid or a gelatinous matter, are occasionally seen in or near carcinomatous growths. These are not to be confounded with—

2. A peculiar condition of the ducts giving rise to the formation of small cysts filled with mucous fluid, as described at page 65.

CAUSES OF THE DEATH OF INDIVIDUALS LABOURING
UNDER CARCINOMA MAMMÆ, AND THE APPEARANCE
FOUND ON THE EXAMINATION OF THEIR BODIES.

1. *Hæmorrhage*.—When the disease has gone on to ulceration, it very often happens that large and repeated hæmorrhages take place which gradually weaken the powers of the patient.

2. *Dyspnœa*.—Great difficulty is often experienced in respiration, and during the later stages of the disease this often becomes a distressing complication. It frequently arises from pleuritic effusion.

3. *Icterus*.—Some time before death it is not uncommon to see the patient with a jaundiced aspect.

4. *Nausea and vomiting*.—These affections of the

stomach are often very distressing, and equally difficult to combat.

5. *Diarrhæa*.—This sometimes seems to terminate the sufferings of the patient, although, as we shall presently see, the mucous membrane of the intestinal canal is not often the seat of carcinoma, at least coexistent with diseases of the breast.

6. *Phlebitis*.—A few cases have apparently died from phlebitis; that is, inflammatory coagula have been discovered in the large venous trunks.

7. *Pneumonia*.—This disease sometimes terminates the sufferings of the patient.

8. *Arachnoid effusion*.

9. *Erysipelas*.

10. *Pleuritic effusion* of an inflammatory nature.

Post-mortem appearances.—In conclusion, I subjoin the analysis of thirty-seven post-mortem examinations of the bodies of persons who have died with *carcinoma mammæ**. By this it will be seen that in those organs which purify the blood this disease occurs most frequently. Carcinomatous growths were found in the

BONES :

1. Calvaria	-	-	-	-	-	-	3 cases.
2. Ribs	-	-	-	-	-	-	5 "
3. Sternum	-	-	-	-	-	-	2 "
4. Humerus (of same side as disease)	-	-	-	-	-	-	1 "

Bones in 11 cases.

* This table is an abstract from the records of necropsies preserved in the Museum of Guy's Hospital.

FIBROUS TISSUES :

1. Dura mater	-	-	-	-	-	1 case.
2. Pericardium	-	-	-	-	-	1 "
3. Cutis (of trunk 1; of arm 1)	-	-	-	-	-	2 "

AREOLAR TISSUE OF MUSCLES :

1. Pectoral and intercostal muscles (frequent)						
2. Heart	-	-	-	-	-	2 "

SEROUS MEMBRANES :

1. Pleura costalis.	-	-	-	-	-	8 "
2. " pulmonalis	-	-	-	-	-	4 "
3. Peritoneum	-	-	-	-	-	4 "
4. Pia mater	-	-	-	-	-	1 "

—
In the fibre tissues in 23 cases.

IN THE ORGANS :—

OF INNERVATION - - - - - - 0 "

OF CIRCULATION - - - - - - 0 "

1. Phlebitis - - - - - - 1 "

OF SANGUINEOUS DEPURATION :

Lymphatic glands.

1. Axillary	-	-	-	-	-	8 "
2. Lumbar	-	-	-	-	-	4 "
3. Anterior mediastinal	-	-	-	-	-	4 "
4. Mesenteric	-	-	-	-	-	3 "

Liver - - - - - - 14 "

1. Gall bladder	-	-	-	-	-	2 "
2. Lobulus spigelii	-	-	-	-	-	1 "

Kidneys	-	-	-	-	-	-	-	4 cases.
1. Urinary bladder (?)	-	-	-	-	-	-	-	1 "
Lungs	-	-	-	-	-	-	-	7 "
1. Pneumonia	-	-	-	-	-	-	-	1 "
								<hr/> 49

BLOOD GLANDS :

1. Spleen	-	-	-	-	-	-	-	2 "
2. Supra-renal capsules	-	-	-	-	-	-	-	1 "
								<hr/> 3

ORGANS OF DIGESTION :

Pancreas	-	-	-	-	-	-	-	2 "
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ORGANS OF PROCREATION :

1. Uterus	-	-	-	-	-	-	-	4 "
2. Ovaries (2 on same side)	-	-	-	-	-	-	-	4 "
								<hr/> 8

SEROUS EFFUSIONS :

1. Pleural	-	-	-	-	-	-	-	7 "
2. Pericardial	-	-	-	-	-	-	-	1 "
3. Peritoneal	-	-	-	-	-	-	-	2 "
4. Arachnoid	-	-	-	-	-	-	-	2 "
								<hr/> 12

INFLAMMATORY EFFUSION :

1. Pleural	-	-	-	-	-	-	-	4 "
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OF CARCINOMA MEDULLARE.

Syn. Medullary fungus.

Fungoid disease.

Encephaloid or cerebriform cancer.

This form of cancer is rarely met with in the mammary gland,—at least, in comparison with *carcinoma fibrosum*,—and I have therefore collected only a very few cases.

Age.—It occurs at an early period of life, even before the organ is fully formed, apparently synchronically with its early stages of development. The cases before cited demonstrate the truth of this assertion, the age of one patient being from 12 to 16, that of the other 16 years. It may, however, occur later in life.

Commencement and progress.—The disease commences as a small tubercle which increases rather quickly, is soft to the touch, not very painful, and very soon affects the integuments. The skin covering the tumor becomes red, the veins enlarge and are dilated, and at last, after the tumor has reached a great size, sloughing takes place, and profuse discharges and often hæmorrhages now reduce the powers of the patient. Before the skin gives way it becomes very tense, glossy, and often much injected; so soft, indeed, as to communicate to the finger the sensation of fluctuation. The axillary glands become affected.

Treatment.—From palliative treatment alone is advantage to be derived. Removal has been performed, but in most cases the disease has returned in or about the cicatrix. Cases of this nature generally terminate very rapidly.

Minute examination of tumors of this nature displays a soft, whitish, almost diffuent solid, held together by very little fibre tissue. The solids composing the

growth are nuclei and nucleated cells. A large quantity of necrosed tissue is generally met with.

CARCINOMA MEDULLARE HÆMATODES.

Syn. Fungus hæmatodes: Hey.

The form of soft cancer described by Mr. Hey as *Fungus hæmatodes* is observed in the mammary gland. I have never had the opportunity of examining a growth of this nature, and therefore I am not prepared to describe its anatomical elements.

During the first period of its growth, however, it does not appear to differ greatly from ordinary *Fungus medullare*, and its characteristic feature is the alarming hæmorrhage which takes place in the later stages. This sometimes occurs in large quantities, and at others in constant oozings, both of which are difficult to arrest.

When hæmorrhage takes place from the interior of these morbid growths, more or less difficulty is always experienced in its control. The extremity of the divided vessel being surrounded by morbid and inorganizable material, in the place of healthy fibre tissue, does not enjoy the opportunity of having a coagulum formed around it. Therefore, upon every occasion that the coats of a vessel are destroyed by the new growth, bleeding takes place.

Whether or not there be any development of vascular tissue with the carcinoma, remains to be proved by further investigations.

CARCINOMA MEDULLARE MELANODES.

In common with other parts of the body, melanic growths may be developed either upon the skin over or within the tissue of the mammary gland.

In the museum of Guy's Hospital is a wax model of this disease developed on the mamma, as well as on other parts of the body; and in that of St. Bartholomew's is a preparation exhibiting the disease within the breast, which was also associated with similar growths in other parts.

All the observations of melanosis seem to demonstrate an alliance with the carcinomatous growths. The nucleated cells and nuclei of this disease present pigment granules within their tissue, which give rise in masses of them to the intensely black hue.

Care, however, must be taken to guard against confusing the darker forms of medullary cancer with melanosis. When blood is effused into medullary tumors the hæmatine or colouring matter of the blood globules exudes, and often gives a very black hue to portions of the mass.

Even extravasated blood may cause a melanotic appearance in *Carcinoma fibrosum*.

The same treatment must be adopted as in *carcinoma medullare*.

CARCINOMA COLLOIDEUM.

Syn. C. alveolare, Mülleri.

A form of carcinoma termed colloid, or gelatiniform

cancer, is found, very rarely, in the female breast. Professors Müller and Rokitansky have each seen one case of this morbid growth in the mammary gland. There is a preparation of this disease in the Museum of the London Hospital and in that of St. Thomas'.

I have been able to obtain only a single specimen for minute examination, and this was from my friend Mr. Robinson, of Camberwell, who removed it several years ago. It had been in spirit, and therefore perhaps its characters were changed. A thin section, however, presented, under the microscope, a very striking resemblance to the structure delineated by Prof. Müller in his work.

The chief peculiarity of this tissue is to preserve its transparency after long immersion in alcohol.

THE MALE MAMMILLA AND RUDIMENTARY GLAND.

In the male sex the nipple is more or less prominent ; the areola is distinct, and beneath it are a few scattered glands, with follicles, out of which hairs project.

Nothing like glandular tissue can be felt in the majority of men, but there is often a slight fulness, particularly if the individual be fat.

Sir A. Cooper has demonstrated the existence of ducts in the rudimentary breast gland of the male.

DEVIATIONS FROM THE ORDINARY NUMBER OF THE MAMMILLÆ.

Two mammillæ only are usually seen, one upon the

anterior surface of either pectoral muscle, and over the fourth ribs.

Deviations from the normal number are, however, seen, and I have collected four cases, and witnessed one myself. An adult male presented this phenomenon, two nipples being in the usual situations and two below over the fifth ribs. The two abnormal nipples were smaller than the others, but the areolæ were distinct. One female child, the progeny of this man, the fourth, was born with four nipples, but she lived only to her fifth year. Of twelve children she was the only one inheriting this peculiarity. With the man, as far as his inquiries extended, it was not hereditary.

STATE OF THE ORGAN AT PUBERTY.

Some activity usually takes place in this organ at puberty, attended, according to the diathesis of the individual, with more or less local pain and general constitutional disturbance. Rest and mild measures suffice in the treatment of these cases. Mr. B. Cooper has witnessed the formation of abscess in this part at puberty; and among the drawings in Guy's museum is one depicting a vascular development or nævus in the site of the mamilla.

GYNECOMAZIA.

Gynecomazia (Γυνή a woman, Μαστός a breast,) signifies a development of the mammary organ in the male

which more or less resembles the form of that of the female. Of this anomaly there are several instances upon record. Sometimes only one, but generally both glands, are equally developed. The development may occur at any period after puberty, and is accompanied with secretion of fluid which oozes from the nipple. These enlarged glands are at times painful. I have seen one gland developed in a healthy, young, but rather delicate man of twenty-five. He stated that it occasionally gave him pain, but I believe that his attention was very constantly directed to it.

In another case I found both breasts enlarged, and of considerable size, as the preparation and the cast in the College museum testify. This man came before me accidentally in the dissecting-room, and he was somewhat advanced in years. In Plate II., figs. 7, 8, and 9, the minute anatomy of one of the glands is shown. It was composed of a very large quantity of fibrous tissue, forming a stroma, and of the terminal vesicles of gland tissue, which contained very minute epithelial cells. This is an interesting fact, particularly when viewed in conjunction with the statements of some authors regarding the secretion of milk by males. Here we find all the essential elements of a gland, but in a rudimentary form. It is also interesting, as I have before shown (Case LVI., Plate IV., fig. 1), that a rudimentary glandular tissue of a similar nature may be developed in the region of the female breast.

This rare condition of the organ is unimportant, and must be carefully distinguished from other more serious

affections. There is, however, sufficient evidence to prove that the organ in this state has been amputated for supposed carcinoma.

SECRETION OF MILK BY THE MALE.

There appears to be sufficient evidence of the fact of the breast of a male having secreted milk. Dr. Young communicated one case to Sir A. Cooper ; * and Humboldt, Franklin, Dunglison, and Blumenbach, also recite instances.

CYSTS CONTAINING FLUID AND INTRA-CYSTIC GROWTHS.

Sero-cystic sarcoma has been developed in the region of the rudimentary male gland. Instances are, however, very rare. I have only met with two, one attested by Prof. Müller, the other by Mr. Arnott. † They were noticed in men of 52 and 54 years of age. In Prof. Müller's ‡ case the disease had been of nearly sixteen years duration ; in Mr. Arnott's, only eight months. Both were successfully treated, the one by excision, and the other by incision.

Bérard states that in a boy of 15 years old a very considerable tumor formed on the chest, and occupied the whole mammary region, extending to the axilla. It was supposed to contain fluid.

* Anatomy of the Breast, p. 157.

† London Medical Gazette, xxii. 378.

‡ Müller, p. 180.

ENCYSTED TUMOR.

There is a curious preparation in the Museum of the Royal College of Surgeons,* removed from the breast of a man. It is described as "an encysted tumor filled with a flaky substance which seemed to be a succession of cuticles, being the same as that which lines it." The nipple appears to have opened, and the cyst may be seen behind it.

CALCAREOUS DEPOSIT.

Morgagni mentions the case of a man whose breast became prominent at 31 years of age, and in fourteen years had attained the size of a fist. It at last ulcerated, and when removed exhibited within a material in one part as hard as chalk, and in others softer. The man exhibited an hereditary gouty diathesis.

CARCINOMA.

Both Carcinoma fibrosum and medullare are seen in the mamilla. Both very rarely occur, but the former more commonly than the latter.

Making allowances for the different structures, the appearances of carcinoma presented in the male do not differ greatly from those observed and before described in the female breast.

* Prep. 156.

The disease generally occurs late in life, although one case is recorded by Mr. Lyford of the early age of 23 years. It is developed behind the mammilla, and judging from the statements of observers it does not appear to assume so active a form as in the female, and the return of the disease after excision has not been so rapid. Yet it commonly, at last, proves fatal.

I have seen but few cases; one in an unhealthy looking man of 44. It was removed by the late Mr. Callaway, and there was no return of the disease after fourteen months had elapsed.

CONCLUSION.

It now only remains to thank those gentlemen, my judges, and, I may now add, the readers of these pages, who have devoted their time to the perusal of this essay; and, the author regretting the faults that must have occurred in so extended a production, hopes that he has at least demonstrated that "*les faits sont les meilleurs raisonnements, car un fait est le raisonnement, plus la preuve.*"—MONTESQUIEU.

EXPLANATION OF THE PLATES.

PLATE I.

FIG. 1 represents the smallest lobule of the gland tissue, from a non-secreting breast, with the minute duct, *a*, passing off. The boundary of this small lobule is very marked, but the loose cellular or uniting tissue connecting it with the surrounding lobules is not represented. A variable degree of translucency pervades the object.

FIG. 2 exhibits the *tunica propria* of the duct, *a*; the fibrous coat of the duct, *b*, which consists of the wavy fibre tissue; and, *c*, the epithelium of the duct. This nucleated epithelium is more accurately represented at FIG. 4.

FIG. 3. The duct has been acted upon by diluted acetic acid: the nuclei of the fibre tissue are seen, *b*, *c*; and the *tunica propria*, *a*, is more distinct.

FIG. 5 represents the appearance of a very small lobule taken from a mammary gland in which the secretion of milky fluid had been actively going on immediately before death, the woman being pregnant. This appears to be composed of smaller masses of the cæcal terminations, *a*, of the ducts enclosed by a liminary membrane, *b*, outside of which is the loose wavy uniting tissue, *c*; in the interior of these smaller masses the secreting cells may be detected at their borders, *d*.

FIG. 6. Here the cæcal terminations of the ducts, or, properly speaking, the convolutions of the *tunica propria*, are

seen, *A*, filled with epithelium, *c*, and, in this instance, the characteristic milk globules. *B* shows more accurately these parts; *a*, the *tunica propria*; *b c*, a granular basis, and the epithelium; *d*, the milk or oil globules.

FIG. 7. This, *a diagram*, explains the formation of the secreting apparatus: it represents a section of a small lobule and its duct, with the masses of cæcal terminations. *a* indicates the liminary fibrous tissue; *b*, the *tunica propria*, with its convolutions or reduplications to form the secreting cells; and, *c*, the areolar tissue, in which the blood-vessels, *d*, ramify. The epithelium, *e*, is represented upon the free surface of the *tunica propria*. This simply explains the whole arrangement.

PLATE II.

FIG. 1. But now suppose that the reduplication of the *tunica propria*, as explained in the last figure, does not exist, we should then see the liminary fibrous tissue of the lobule enclosing a sac of nearly the same figure as itself, but smaller; and such a structure is shown at Plate II. fig. 1, in those small pedunculated bodies which were found in the case related at page 106. Here, *a*, the peduncle, represents the imperfectly developed duct; *b*, the cæcal terminations, but merely a simple, expanded membrane, without reduplication, *because, morbidly, imperfectly developed*; and, *c*, the surrounding areolar tissue, here in an early stage of development.

FIG. 2. The portion of areolar or fibre tissue enclosed between the lines at *d* in the last figure. *a*, the fibres; *b*, the nucleated bodies.

FIG. 3. A larger pedunculated body, with blood-vessels ramifying in its tissue.

FIGS. 4 and 5. The terminal secreting cells, from the very large new growth preserved in the Museum of the College of Surgeons, No. 208. Fig. 4, *a*, uniting tissue; *b*, epithelium.

Fig. 5, treated with diluted acetic acid : *a*, nuclei of uniting tissue ; *b*, epithelium.

FIG. 6. Terminal secreting cells, composing one of those growths termed "chronic tumor." *a*, the limitary membrane or *tunica propria* ; *b*, epithelium.

FIGS. 7, 8, and 9 illustrate the minute anatomy of a very large male mamma. Fig. 7, the uniting areolar tissue ; fig. 8, the terminal secreting cells, containing epithelium ; fig. 9, three terminal cells, surrounded by areolar tissue.

PLATE III.*

Illustrates the anatomy of the intra-cystic and cysto-sarcomatous growths.

FIG. 1, a portion of a very soft intra-cystic growth, *a* ; and the epithelial lining of the cyst, *b*.

FIG. 2, a section from a very large cysto-sarcomatous growth. In this case the cysts were very small, and the pedunculated growths, *a*, exhibited the peculiar foliated appearance so characteristic of their nature.

FIGS. 3 and 4. These foliated growths magnified.

FIG. 5. One of these bodies, highly magnified, showing its resemblance to one of the terminal cells of gland tissue, and containing epithelial cells.

FIG. 6. A representation of some of the intra-cystic growths, rather enlarged, to show the manner in which they are attached to the general mass.

FIG. 7. One of these bodies, magnified, exhibiting a striking resemblance to the caecal terminations of the ducts of gland tissue.

FIG. 8. A part of the same, more highly magnified, showing the limitary membrane, *b* ; and the epithelium, *a*.

PLATE IV.

FIG. 1. Section of a tumor removed from the breast of a

* At the end of Case XLII., instead of Plate III. read II.

young woman, page 130, and Case LVI. *a*, the cæcal terminations of gland tissue, containing epithelium; *b*, the epithelium. (Compare Plate II. figs. 8 and 9).

FIG. 2. Section of a small portion of a very large tumor (Case LXV.) Its lobed character is very distinct, as well as its minutely lobulated structure. *a*, cæcal terminations of gland tissue, with epithelium; *b*, epithelium and nuclei.

FIG. 3. A tumor divided in its centre, enveloped by a fibrous capsule, and composed of two distinct structures: the one, *a*, fibrous, dense, and tough; the other, *b*, delicate, granular, and of loose texture (Case LV.) This shows a combination of the "chronic tumor," and "cysto-sarcoma." At *c*, a fissure is represented, an appearance often seen in these tumors. *d*, cæcal terminations of the gland tissue composing the structure, *b*, in the last figure.

PLATE V.

FIG. 1. Delineation of a tumor depending upon a diseased condition of the ducts (Case XXII.) *a* indicates the extremity of a divided duct; *b*, a solid, in one of the cavities, composed of epithelium and oily matter.

FIG. 2. Granular cells, or cells containing minute oily particles.

FIG. 3. Minute oily particles separate or aggregated together, forming small dark masses, and large oil globules.

FIGS. 4 and 5. Epithelium cells with nuclei.

PLATE VI.

FIG. 1. A cystosarcomatous growth enclosed in a fibrous cyst (Case LVIII.)

FIG. 2. A minute lobule.

FIG. 3. A minute lobule, which exhibits the cæcal terminations of the gland tissue enclosing epithelium.

PLATE VII.

FIG. 1. A small lobular imperfect hypertrophy (Case LIX.)

FIG. 2. The cæcal terminations of the gland tissue, with their investment of areolar tissue.

FIGS. 3 and 4. Cæcal terminations of gland tissue, containing epithelium.

FIG. 5. A mass of epithelium cells: the limitary or "base-membrane" being torn, has permitted them to escape, but they retain the shape of the cæcal terminations of the gland tissue.

FIG. 6. Nucleated epithelium cells.

PLATE VIII.

FIG. 1. A lobular imperfect hypertrophy (Case LX.)

FIG. 2. A number of the cæcal terminations of the gland tissue, containing epithelium.

FIG. 3. One of the last, highly magnified.

FIG. 4. The epithelium.

PLATE IX.

FIG. 1. Section of a carcinoma fibrosum, removed from the breast. The skin is infiltrated. The fat between the disease and the skin has disappeared at one point. Bristles are inserted into the contracted ducts of the gland tissue.

FIG. 2. A section of several lymphatic glands, infiltrated with the cells of carcinoma.

FIG. 3. A section of a carcinoma fibrosum, removed from a man's mamilla. *a*, the nipple; *b*, traces of ducts.

FIG. 4. A very atrophied mammary gland, infiltrated with carcinoma. The nipple retracted. *a*, remains of the ducts.

PLATE X.

FIG. 1. A section to illustrate the mode in which carcinoma extends in the white fibrous lines from a tumor to the skin; *a*, C. fibrosum; *b*, gland tissue.

FIG. 2. A magnified view of a thin section from that portion of the last figure inclosed in the dotted line, demonstrating minute collections of nucleated cells in the areolar tissue. This was from a very chronic and hard carcinoma.

FIG. 3. A section of carcinoma fibrosum, in which several cysts (?) are seen,—formed, however, as minute examination proved, of dilated ducts.

PLATE XI. (FRONTISPIECE.)

FIG. 1. Very large mammæ, the result of hypertrophy of the glandular and adipose tissue, in a girl 17 years of age.

FIG. 2. Hypertrophy of the breasts, which commenced at puberty. When the bust was made from which the drawing was taken, the girl was 13 years of age.

DIAGRAM I.

This is intended to explain the formation of those diseases which depend upon a morbid condition of the ducts. — (See page 67.)

DIAGRAM II.

This is intended to explain the mode of formation of true sero-cysts, and the development of the intra-cystic growths. — (See page 76.)

THE END.













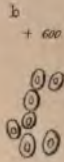




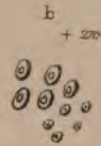


Plate IV

1



2



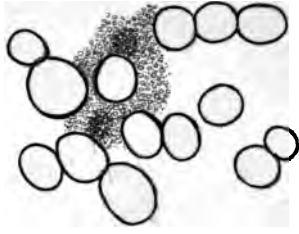
3







2. 100



100



100

(10)

100







Plate VI.

3
+ 200



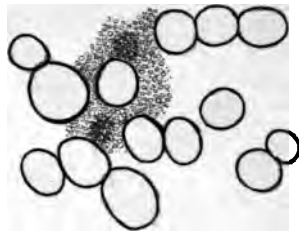
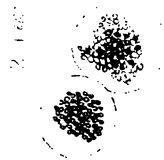
2
+ 50







Plate V.



1891

2nd by W. H. H.







Plate VIII.

1



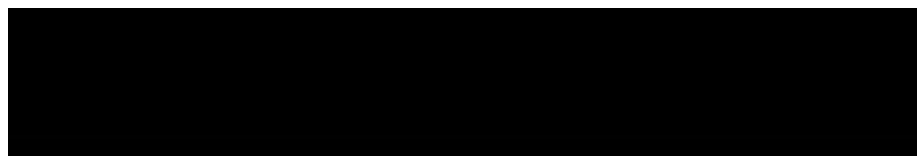
2
+ 50



3
+ 270









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Plate VII

1



5 + 277

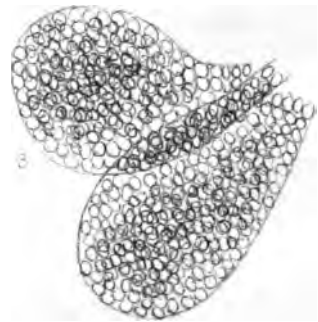
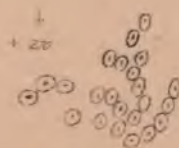






Plate VIII.

1



2
+ 50



3
+ 200





1. The first part of the document is a list of names and addresses of the members of the committee.

2. The second part of the document is a list of names and addresses of the members of the committee.

3. The third part of the document is a list of names and addresses of the members of the committee.

4. The fourth part of the document is a list of names and addresses of the members of the committee.

5. The fifth part of the document is a list of names and addresses of the members of the committee.

6. The sixth part of the document is a list of names and addresses of the members of the committee.

7. The seventh part of the document is a list of names and addresses of the members of the committee.

8. The eighth part of the document is a list of names and addresses of the members of the committee.

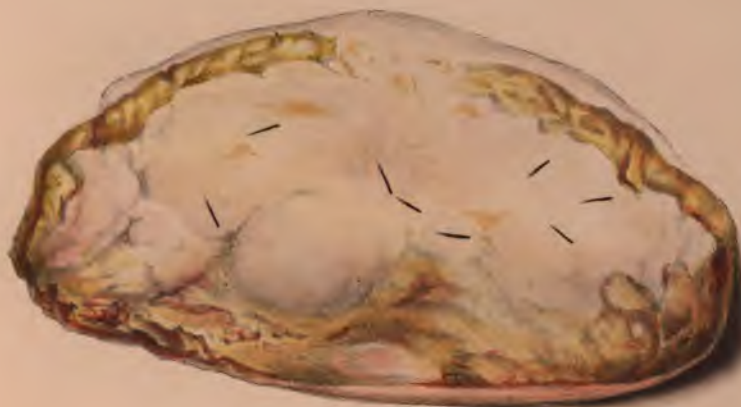
9. The ninth part of the document is a list of names and addresses of the members of the committee.

10. The tenth part of the document is a list of names and addresses of the members of the committee.



Plate IX

1



2



3



1

4







PLATE X.

Fig. 1



Fig. 4
x 870



Fig. 5
x 870



Fig. 2
x 270

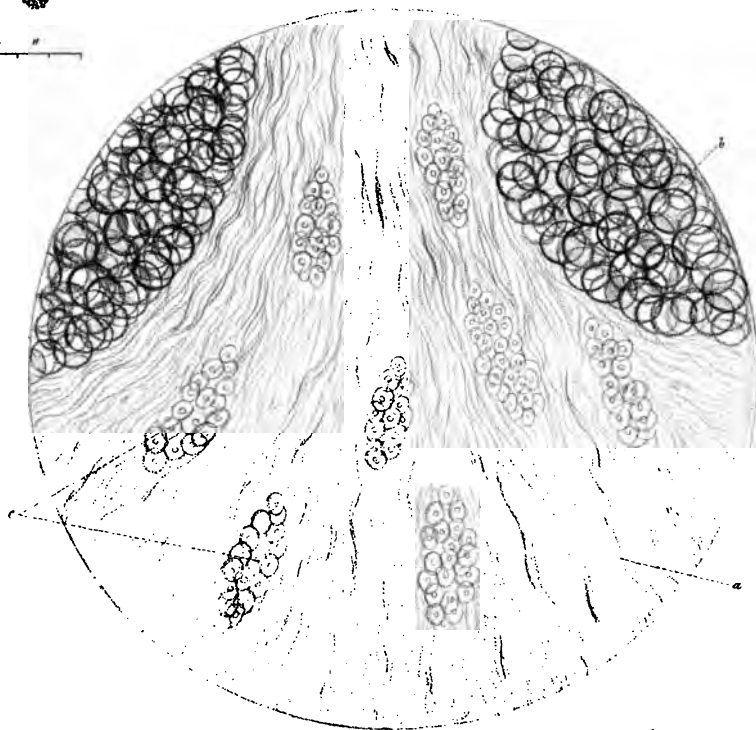


Fig. 3

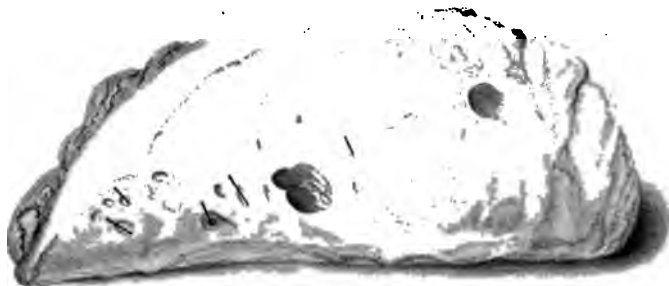






Diagram I.

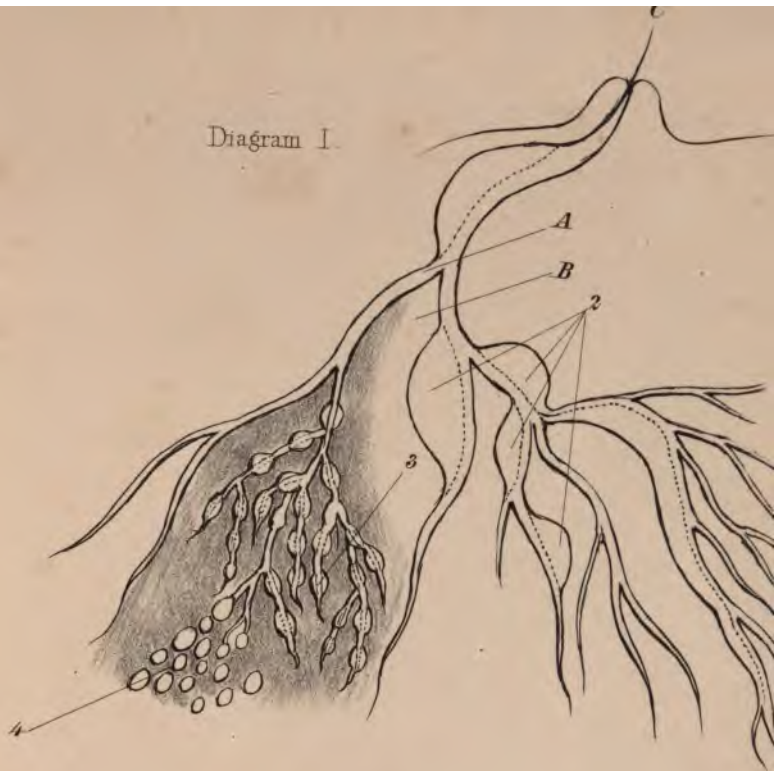


Diagram II.

